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An Inventory and Analysis of the Alien Plant Flora of New Mexico

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Abstract

I summarized published information on non-native vascular plants recorded as established in the wild in New Mexico. Alien plants numbered 390 species and one additional hybrid form, with 13 species being represented by two or three alien subspecies. Alien plant species comprised 1 family and species of fern, 50 families and 270 species of Dicotyledons, and 5 families and 119 species of Monocotyledons. The families with most alien species were Poaceae, with 112, Asteraceae, with 43, Brassicaceae, with 42, Fabaceae, with 22, and Chenopodiaceae, with 18. About 77.2 percent of alien species were of Eurasian origin, with 11.3 percent being from other parts of North America. Annual forbs, vines and grasses constituted 44.9 percent of the aliens, whereas trees and shrubs constituted 8.5 percent of alien species. Since publication of the first state flora, the number of alien plants has increased from 136 in 1915 to 390 in 2000. The pattern of increase has been exponential, with about 6.75 new aliens appearing per year since 1980. Many other alien plants are present in neighboring states, and the potential for additional invasions is great.

Introduction

New Mexico, with a vascular plant flora of about 3542 species in AD 2000, is experiencing invasions of alien plant species from several phytogeographic regions: the Chihuahuan and Sonoran desert regions to the south and west, the Colorado Plateau and Great Basin to the northwest, the Rocky Mountain region to the north, and the Great Plains to the east. Although New Mexico is somewhat remote from the points of introduction of alien plants from outside North America, many such species are now appearing. This review examines the known flora of alien plants in New Mexico, and traces the history of invasion from 1915, the data of publication of the first state flora, to 2000.

Methods

Information on the current presence of alien species was taken from Allred (2000), Carter (1997), and recent issues of *The New Mexico Botanist.* Data on the presence of alien plants at earlier dates were taken from Wooton and Standley (1915), Tidestrom and Kittell (1941), and Martin and Hutchins (1980/1981). Data on growth form, life history pattern, and native region were obtained from Martin and Hutchins (1980/1981), other regional floras, and the National Resource Conservations Service's Plants Database (USDA-NRCS 2000). Plant nomenclature was based on Allred (2000) and Carter (1997), the latter for woody plants not included in the former. The current species total for New Mexico was obtained from the statistical summary given by Roalson and Allred (1995) plus species new to the state reported since then in *The New Mexico Botanist.*

Results

A total of 390 species plus one hybrid taxon were recognized as established aliens (Appendix I). Three additional species were characterized as cryptogenic species (Carlton 1996), that is, species of uncertain status because natural pre-European invasion might have occurred or because European settlers might have introduced these species before the first studies of the flora of North America. Three species of dicots and 10 of grasses were represented by 2 or 3 subspecies. Alien species included 1 family and species of fern, 50 families and 270 species of Dicotyledons, and 5 families and 119 species of Monocotyledons. Seven families were represented by more than 10 species: Poaceae (112), Asteraceae (43), Brassicaceae (42), Fabaceae (22), Chenopodiaceae (18), Caryophyllaceae (12), and Polygonaceae (12).

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Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(Aliens, Continued from page 1)

Since the total number of species known in New Mexico is now about 3542, alien species make up about 11.0 percent of the state's flora.

Species classified as cryptogenic included *Amaranthus hybridus* L., Slim Amaranth; *Limosella aquatica* L., Mudwort; and *Xanthium strumarium* var. *canadense* (Mill.) Torr., Cocklebur. These species, all widespread in Europe, were well established in eastern North America in the early 18th Century, and might have reached North America by natural or human-assisted dispersal.

Several species occasionally considered alien are omitted from the list because of recent analyses that establish them as native. These include several taxa of Corispermum, which Martin and Hutchins (1980/81) characterize as alien. Mosyakin (1996) has revised this group and determined our species to be native to North America. New Mexican varieties of *Oxalis corniculata*, some North American forms of which are European exotics, are natives (Turner 1994). The New Mexican subspecies of *Calystegia sepium*, listed in some floras as a European import, is likewise native to western North America (Austin 1990).

The number of species of alien plants has increased by a factor of 2.88-fold since publication of the state's first flora (Wooton and Standley 1915)(Table 1). In 1915, only 136 species of 32 families had been recorded, corresponding to 4.6 percent of the flora then known (2975 species), or 4.1 percent of the flora known today. By 1942, no additional families of aliens had appeared, but the total number of alien species had increased to 181, a rate of increase of 1.67 species per year. Between 1942 and 1980, aliens belonging to 14 additional families had appeared, with total species increasing to 255, a rate of increase of 1.95 per year. Since 1980, 10 new families of aliens have appeared and 135 additional species have been recognized, a rate of increase of 6.75 per year. The number of alien species established in New Mexico has thus been increasing exponentially.

Most of the 24 families of aliens appearing since 1942 are now represented by only 1-2 species. Altogether, these families have contributed only 43 species to the current alien list. Two families however, have contributed more substantially; 5 species of the Rosaceae, all native to Europe or Eurasia, and 4 species of the Ranunculaceae, all from the Old World, have appeared in New Mexico's alien flora since 1942.

Since 1915, the major families increasing most in relative number of species were the Brassicaceae (3.82-fold increase), Poaceae (3.61-fold increase), and Asteraceae (2.87-fold increase). These three families have contributed 55.1 percent(140 species) of the increase in number of alien species since 1915.

Annual forbs were the most frequent life form group among aliens, followed by perennial forbs, annual grasses and perennial grasses (Table 2). Annuals of all groups make up 44.9 percent of the present alien flora. Graminoids constitute 29.2 percent of the total alien flora.

From 1915 to 2000, the groups increasing most in relative species number were trees, which increased 6.67-fold, and shrubs, which increased 4.33-fold. Graminoids as a whole increased 3.56-fold, with annual grasses increasing 4.20-fold and perennial grasses 3.00-fold. Forbs increased only 2.44-fold.

Forbs and vines with variable life history patterns (i.e., annual/biennial, annual/perennial, or biennial/perennial) almost doubled in numbers between 1980 and 2000. The total number of vines and woody plants more than doubled during this same period.

About 77.2 percent of present alien plants are native to temperate Eurasia (Table 3). An additional 11.3 percent are native to the United States, Canada, and Mexico. The representation of temperate Eurasian species has declined somewhat since 1915, when it was about 83.8 percent. Species native to Africa and the Old World tropics have increased 6.33-fold; 13 of the 19 species from these areas are grasses. Since 1980, the numbers of alien species from other parts of North America have increased 2.44-fold.

Discussion

The alien component of the New Mexico flora, 11.0 percent, is only slightly greater than that estimated for the coterminous United States, 10.8 percent (Vitousek et al. 1997). The number of established alien plants in the coterminous United States, however, is estimated to be about 2,100 species. This number, together with the fact that northern Mexico and states adjacent to New Mexico possess many alien species that have not yet invaded New Mexico indicates that many additional invasions are certain to occur. In 1990, for example, Texas was estimated to possess 492 established alien plants, which equaled 9.9 percent of that state's flora (Vitousek et al. 1997). Colorado, with a total flora of 3088 taxa (species, subspecies, and varieties), has 492 alien taxa, which equal 15.9 percent of the flora (Weber and Wittman 1992). In both states, the absolute number of alien species is more than 100 greater than the number established in New Mexico. No statewide analysis is available for Arizona, but California has about 1045 established alien plants, which make up 17.7 percent of the state flora (Randall et al. 1998). Many of California's alien plants reach Arizona, so that Arizona probably has a substantially larger number of alien plant species than New Mexico.

The native regions of alien plants in New Mexico differ somewhat from those of eastern North America. In the central and northeastern United States and adjacent Canada, 87.9 percent of alien plants are of Eurasian origin, with only 4.3 percent coming from other parts of North America (Foy et al. 1983). In New Mexico, the representation of Eurasian species is 10.4 percent less, but the importance of exotics from elsewhere in North America is greater. This reflects the fact that New Mexico is located central to several diverse native floras, and to the fact that urban and agricultural development of the state have created environments favorable for invasion of many species from the more humid eastern part of the continent.

New Mexico also differs somewhat from areas of the Pacific Coast in the representation of alien plants from different regions. In California, roughly 65 percent of alien plants come from Eurasia (Randall et al. 1998). For New Mexico, the percentage of aliens from Eurasia is thus about 12.2 percent greater, with the bulk of these being of European origin. The greater isolation of California, compared to New Mexico, from the European source area of exotic plants probably accounts for this difference. About 5 percent of California's exotics come from Australia and New Zealand, whereas less than 1 percent of New Mexico's exotics come from this region. An additional 7 percent of California's aliens come from southern Africa, compared to about 3.1 percent for New Mexico.

The large increase in alien woody plant species in New Mexico over the last 20 years of the 20th Century may be somewhat more apparent than real. Field botanists have often overlooked the early stages of establishment of many of these species in the wild, documenting them only when they appear far from areas of obvious planting (Jack L. Carter, Pers. Comm.). Nevertheless, these species represent one of our most serious ecological threats because of their tendency to invade native riparian ecosystems.

The abundance of alien plant species in bordering states means that New Mexico is poised to receive many new invaders in coming years. Indeed, the current rate of increase in alien species suggests that at least 6 to 7 species are likely to appear per year in the immediate future. This likelihood argues for establishment of an early detection and eradication program for alien invaders in New Mexico.

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Table 1. The number of families and species of alien plants in the New Mexico flora from 1915 through 2000.

		1915[1]	1942[2]	1980[3]	2000
Ferns					
	Families				1
	Species				1
Dicots					
	Families	29	29	41	50
	Species	104	125	184	270
Monocots					
	Families	3	3	5	5
	Species	33	58	72	119
Total					
	Families	32	32	46	56
	Species	136	181	255	390

[1]Wooton and Standley (1915)
[2]Tidestrom and Kittell (1942)
[3]Martin and Hutchins (1980/81)

Table 2. The number of alien species of different life forms in the New Mexico flora from 1915 through 2000.

		1915[1]	1942[2]	1980[3]	2000
Forbs					
	Annual	54	65	83	110
	Biennial	4	6	16	19
	Perennial	29	33	52	73
	Annual/Biennial	5	7	10	21
	Annual/Perennial	3	4	5	6
	Biennial/Perennial	1	1	2	5
Vines					
	Annual	1	1	1	2
	Perennial	1	1	3	6
	Annual/Perennial				1
Graminoids					
	Annual	15	34	40	63
	Perennial	17	23	28	51
Shrubs		3	3	4	13
Trees		3	3	11	20
TOTAL		136	181	255	390

[1]Wooton and Standley (1915)
[2]Tidestrom and Kittell (1942)
[3]Martin and Hutchins (1980/81)

Table 3. The number of alien species of different geographical origins in the New Mexico flora from 1915 through 2000.

		1915[1]	1942[2]	1980[3]	2000
Temperate Eurasia					
	Europe	81	101	138	196
	Eurasia	27	38	51	72
	Asia	6	7	19	33
Old World Tropics		1	3	4	7
Africa		2	3	6	12
New World Tropics		6	10	11	14
Temperate South America		4	6	7	10
Australia		1	1	1	2
North America					
	USA/Canada	7	11	15	38
	Mexico	1	1	3	6
TOTAL		136	181	255	390

[1]Wooton and Standley (1915)
[2]Tidestrom and Kittell (1942)
[3]Martin and Hutchins (1980/81)

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Appendix I. Alien plants known to be established in New Mexico (December 2000).

Ferns and Allies

Salviniaceae
Salvinia minima Baker, Water Spangles

Angiosperms: Diocotyledoneae

Aceraceae
Acer saccharinum L., silver maple
Amaranthaceae
Amaranthus albus L., prostrate pigweed
Amaranthus caudatus L., love-lies-bleeding
Amaranthus cruentus L., red amaranth
Amaranthus hypochondriacus L., Prince-of-Wales feather
Amaranthus retroflexus L., redroot amaranth
Amaranthus viridus L., slender amaranth
Apiaceae
Apium graveolens L., wild celery
Apium leptophyllum (Pers.) Sprague ex Britt. & Wilson, marsh parsley
Carum carvi L., caraway
Conium maculatum L., poison hemlock
Coriandrum sativum L., coriander
Daucus carota L., Queen Anne's lace
Foeniculum vulgare Mill., fennel
Levisticum officinale W.D.J. Koch, garden lovage
Pastinaca sativa L., wild parsnip
Asteraceae
Acroptilon repens (L.) DC., Russian knapweed
Anthemis cotula L., camomile
Arctium minus (Hill) Bernh., burdock
Artemisia biennis Willd. var. *biennis*, biennial wormwood
Calyptocarpus vialis Less., straggler daisy
Carduus acanthoides L., spiny plumeless thistle
Carduus nutans L., musk thistle
Carthamus tinctorius L., safflower
Centaurea calcitrapa L., purple starthistle
Centaurea diffusa Lam., diffuse knapweed
Centaurea maculosa Lam., spotted knapweed
Centaurea melitensis L., Malta starthistle
Centaurea solsticialis L., yellow starthistle
Chrysanthemum leucanthemum L., oxeye daisy
Cichorium intybus L., chicory
Cirsium arvense (L.) Scop., Canada thistle
Cirsium vulgare (Savi) Ten., bull thistle
Conyza bonariensis (L.) Cronq., asthmaweed
Conyza ramosissima Cronq., dwarf horseweed
Cosmos bipinnatus Cav., garden cosmos
Cotula australis (Sieber) Hook. f., Australian waterbuttons
Eclipta prostrata (L.) L., false daisy
Erigeron annuus (L.) Pers., eastern daisy fleabane
Galinsoga parviflora Cav., gallant-soldier
Hedypnois cretica (L.) Willd., cretanweed
Hypochaeris radicata L., hairy catsear
Lactuca serriola L var. *integrifolia* Bogehn., prickly lettuce
Lactuca serriola L var. *serriola* , prickly lettuce
Onopordum acanthum L., Scotch thistle
Pentzia incana (Thunb.) O. Kuntze, African sheepbush
Scorzonera laciniata L., cutleaf vipergrass
Senecio vulgaris L., common groundsel
Silybum marianum L., blessed milkthistle
Sonchus arvensis L., field sowthistle
Sonchus asper (L.) Hill, spiny-leaved sowthistle
Sonchus oleraceus L., common sowthistle
Tanacetum vulgare L., common tansy
Taraxicum laevigatum (Willd.) DC., red-seeded dandelion
Taraxacum officinale Weber, common dandelion
Tragopogon dubius Scop., yellow salsify
Tragopogon porrifolius L., salsify
Tragopogon pratensis L., meadow goatsbeard
Vernonia noveboracensis (L.) Michx., New York ironweed
Xanthium spinosum L., cocklebur
Bignoniaceae
Catalpa speciosa Warder, northern catalpa
Boraginaceae
Cynoglossum officinale L., common hound's tongue
Echium vulgare L., viper's bugloss
Lappula squarrosa (Retz.) Dumort., European stickseed
Myosotis scorpioides L., true forget-me-not
Symphytum officinale L., common comfrey
Brassicaceae
Alyssum desertorum Stapf., desert madwort
Alyssum minus (L.) Rothm., alyssum
Berteroa incana (L.) DC., hoary false madwort
Barbarea vulgaris R. Br., common wintercress
Brassica juncea (L.) Cosson, India mustard
Brassica napus L., turnip
Brassica rapa L., field mustard
Brassica tournefortii Gouan, Asian mustard
Camelina microcarpa Andrz., littlepod false flax
Camelina sativa (L.) Crantz, gold-of-pleasure
Capsella bursa-pastoris (L.) Medic., shepherd's purse
Cardamine hirsuta L. , hairy bittercress
Cardaria draba (L.) Desv., hoary cress
Cardaria chalapensis (L.) Handel-Mazetti, lenspod whitetop
Chorispora tenella (Pall.) DC., crossflower
Conringia orientalis (L.) Dumort,, hare's ear mustard
Coronopus didymus (L.) I. E. Smith, lesser swinecress
Descurainia sophia (L.) Webb, flixweed
Diplotaxis muralis (L.) DC., annual wallrocket
Diplotaxis tenuifolia (L.) DC., perennial wallrocket
Eruca vesicaria (L.) Cav., rocketsalad
Erysimum repandum L., spreading wallflower
Hesperis matronalis L., dames rocket
Iberis umbellata L., globe candytuft
Isatis tinctoria L., dyer's woad
Lobularia maritima (L.) Desv., sweet alyssum
Lepidium campestre (L.) R. Br., field pepperweed
Lepidium latifolium L., perennial pepperweed
Lepidium perfoliatum L., clasping pepperweed
Malcolmia africana (L.) R. Br., African mustard
Matthiola bicornis DC., night scented stock
Nasturtium officinale R. Br., watercress
Raphanus sativus L., radish
Rapistrum rugosum (L.) Allioni, annual bastardcabbage
Rorippa microphylla (Boehn. ex Reichenb.) Hyland ex Löve & Löve, one-row yellowcress
Sinapis alba L., white mustard
Sinapis arvensis L., charlock mustard
Sisymbrium altissimum L., tall tumblemustard
Sisymbrium irio L., London rocket
Sisymbrium loeselii L., small tumbleweed mustard
Sisymbrium officinale (L.) Scop. L., hedgemustard
Thlaspi arvense L., pennycress

(Continued on page 5, Aliens)

Botany is the natural science that transmits the knowledge of plants.
— Linnaeus

(Aliens, Continued from page 4)

Caesalpiniaceae
- *Caesalpinia gilliesii* (Hook.) Wallich ex D. Dietr., bird-of-paradise
- *Gleditsia triacanthos* L., honey locust

Campanulaceae
- *Campanula rapunculoides* L., rampion bellflower

Cannabaceae
- *Cannabis sativa* L., marijuana

Caprifoliaceae
- *Lonicera japonica* Thunb., Japanese honeysuckle
- *Lonicera morrowii* A. Gray, Morrow's honeysuckle
- *Lonicera tatarica* L., Tatarian honeysuckle
- *Lonicera* x *bella* Zabel [*morrowii* X *tatarica*], pretty honeysuckle

Caryophyllaceae
- *Agrostemma githago* L., common corncockle
- *Arenaria serpyllifolia* L. thyme-leafed sandwort
- *Cerastium viscosum* L., sticky chickweed
- *Cerastium vulgatum* L., common mouse-eared chickweed
- *Diantlus armeria* L., Deptford pink
- *Saponaria officinalis* L., bouncing-bet
- *Silene latifolia* Poir. ssp. *alba* (Miller) (= *Lychnis alba* Miller), white cockle
- *Silene noctiflora* L., night-flowering catchfly
- *Spergularia media* L., media sandspurry
- *Spergularia rubra* L., red sandspurry
- *Stellaria media* (L.) Cyrillo, common chickweed
- *Vaccaria hispanica* (Miller) Rauschert, cow-cockle

Chenopodiaceae
- *Atriplex hortensis* Moq., garden orache
- *Atriplex rosea* L., tumbling saltweed
- *Atriplex semibaccata* R. Br., Australian saltbush
- *Bassia hyssopifolia* (Pal.) Kuntze, five-hook
- *Chenopodium album* L., lamb's quarters
- *Chenopodium capitatum* (L.) Asch., strawberry blite
- *Chenopodium glaucum* L. ssp. *glaucum*, oakleaf goosefoot
- *Chenopodium hircinum* Schrad., avian goosefoot
- *Chenopodium murale* L., nettle-leaf goosefoot
- *Chenopodium paganum* Reichb., goosefoot
- *Chenopodium rubrum* L., red goosefoot
- *Halogeton glomeratus* (Bieb.) C. A. Mey., halogeton
- *Kochia scoparia* (L.) Roth, summer cypress
- *Salsola collina* P. S. Pallas, slender Russian thistle
- *Salsola paulsenii* Litv., Russian thistle
- *Salsola tragus* L., prickly Russian thistle
- *Teloxys ambrosioides* L., Mexican tea
- *Teloxys botrys* (L.) W. A. Weber, Jerusalem oak goosefoot

Clusiaceae
- *Hypericum perforatum* L., common St. Johnswort

Convolvulaceae
- *Convolvulus arvensis* L., field bindweed
- *Ipomoea hederacea* (L.) Jacq., ivyleaf morning-glory
- *Ipomoea purpurea* (L.) Roth, tall morning-glory

Cucurbitaceae
- *Citrullus vulgaris* Schrad.var. *citroides* Bailey, watermelon
- *Citrullus vulgaris* Schrad.var. *vulgaris* Bailey, watermelon
- *Cucumis melo* L., cantaloupe
- *Momordica balsamina* L., balsam-apple

Cuscutaceae
- *Cuscuta epithymum* L., clover dodder

Dipsacaceae
- *Dipsacus fullonum* L. ssp. *sylvestris* (Huds.) Clapham, teasel

Elaeagnaceae
- *Elaeagnus angustifolia* L., Russian olive

Euphorbiaceae
- *Euphorbia esula* L., leafy spurge
- *Euphorbia peplus* L., petty spurge

Fabaceae
- *Alhagi maurorum* Medikus., camelthorn
- *Caragana arborescens* Lam., Siberian pea shrub (George W. Cox)
- *Coronilla varia* L., purple crownvetch
- *Lathyrus latifolius* L., perennial pea
- *Lotus corniculatus* L.., birdfoot deervetch
- *Medicago lupulina* L., black medic
- *Medicago polymorpha* L., burclover
- *Medicago sativa* L., alfalfa
- *Melilotus indicus* (L.) All., annual yellow sweetclover
- *Melilotus officinalis* (L.) Lam., sweetclover
- *Onobrychis viciifolia* Scop., sainfoin
- *Robinia hispida* L., bristly locust
- *Robinia pseudo-acacia* L., black locust
- *Sphaerophysa salsula* (Pall.) DC., alkali Swainsonpea
- *Trifolium fragiferum* L., strawberry clover
- *Trifolium hybridum* L., alsike clover
- *Trifolium pratense* L., red clover
- *Trifolium procumbens* L., field clover
- *Trifolium repens* L., white clover
- *Vicia dasycarpa* Ten., winter vetch
- *Vicia sativa* L. ssp *nigra* (L.) Ehrh., garden vetch
- *Vicia villosa* Roth, winter vetch

Gentianaceae
- *Sabatia angularis* (L.) Pursh, rosepink

Geraniaceae
- *Erodium cicutarium* (L.) L'Her., red-stemmed filaree

Haloragaceae
- *Myriophyllum aquaticum* (Vell.) Verdc., parrot feather watermilfoil
- *Myriophyllum spicatum* L., spike watermilfoil
- *Myriophyllum verticillatum* L., whorl-leaf watermilfoil

Lamiaceae
- *Lamium amplexicaule* L., henbit deadnettle
- *Leonurus cardiaca* L., motherwort
- *Marrubium vulgare* L., horehound
- *Mentha rotundifolia* (L.) Huds., apple mint
- *Mentha spicata* L., spearmint
- *Nepeta cataria* L., catnip
- *Prunella vulgaris* L., heal-all
- *Salvia pratensis* L., meadow sage
- *Scutellaria galericulata* L., marsh skullcap

Linaceae
- *Linum usitatissimum* L., common flax

Lythraceae
- *Lythrum salicaria* L., purple loosestrife

Malvaceae
- *Abutilon theophrasti* Medic., velvetleaf
- *Alcea rosea* L., hollyhock
- *Hibiscus trionum* L., flower-of-an-hour
- *Malva crispa* L., curly mallow
- *Malva neglecta* Wallr., common mallow
- *Malva parviflora* L. cheeseweed mallow
- *Malva sylvestris* L., high mallow

Meliaceae
- *Melia azedarach* L., Chinaberry

Mimosaceae
- *Albizia julibrissin* Durazzini, mimosa

Molluginaceae
- *Mollugo cerviana* L., threadstem carpetweed
- *Mollugo verticillata* L., green carpetweed

Moraceae
- *Maclura pomifera* (Raf.) Schneid., Osage orange
- *Morus alba* L., White Mulberry

Oleaceae
- *Fraxinus pennsylvanica* Marsh., green ash
- *Ligustrum vulgare* L., European privet

Papaveraceae
- *Papaver rhoeas* L., com poppy
- *Papaver somniferum* L., opium poppy

Plantaginaceae
- *Plantago lanceolata* L., narrowleaf plantain
- *Plantago major* L., common plantain

Polemoniaceae
- *Phlox divaricata* L., wild blue phlox (George W. Cox)

Polygonaceae
- *Fagopyrum esculentum* Moench, buckwheat
- *Polygonum aubertii* Henry, Chinese fleecevine

(Continued on page 6, Aliens)

(Aliens, Continued from page 5)

Polygonum aviculare L., knotweed
Polygonum convolvulus L., black bindweed
Polygonum lapathifolium L., curltop willowweed
Polygonum persicaria L., spotted ladysthumb
Rumex acetosella L., sheep sorrel
Rumex crispus L., curly dock
Rumex obtusifolius L., bitter dock
Rumex patientia L., patience dock
Rumex pulcher L., fiddle dock
Rumex stenophyllus Ledeb., narrowleaf dock (Roger S. Peterson)

Portulacaceae
Portulaca oleracea L. ssp. *impolita* Danin & H. G. Baker, purslane
Portulaca oleracea L. ssp. *oleracea*, purslane
Portulaca oleracea L. ssp. *papillito-stellulata* Danin & H. G. Baker, purslane

Primulaceae
Anagallis arvensis L., scarlet pimpernel
Centunculus minimus L., chaffweed

Ranunculaceae
Clematis orientalis L., Oriental virginsbower
Consolida ajacis (L.) Schur., rocket larkspur
Ranunculus acris L., tall buttercup
Ranunculus testiculatus Crantz, curveseed butterwort

Rosaceae
Malus sylvestris P. Mill., European crabapple
Pyracantha coccinea Roemer, scarlet firethorn
Pyrus communis L., common pear
Rubus discolor Weihe & Nees, Himalayan blackberry
Sanguisorba minor Scop., small burnet

Rubiaceae
Galium aparine L., cleavers

Salicaceae
Populus alba L., white poplar
Salix alba L., white willow
Salix babylonica L., weeping willow
Salix fragilis L., crack willow

Scrophulariaceae
Linaria dalmatica (L.) Mill., Dalmatian toadflax
Linaria vulgaris Mill., yellow toadflax
Verbascum blattaria L., moth mullein
Verbascum thapsus L., common mullein
Verbascum virgatum Stokes, wand mullein
Veronica anagallis-aquatica L., water speedwell
Veronica arvensis L., corn speedwell
Veronica persica Poir., birdeye speedwell
Veronica serpyllifolia L., thymeleaf speedwell

Simaroubaceae
Ailanthus altissima (Mill.) Swingle, ailanthus

Solanaceae
Datura innoxia Miller, angel's trumpet
Datura stramonium L., jimsonweed
Hyoscyamus niger L., black henbane
Lycium barbarum Mill., matrimony vine
Nicotiana glauca Graham, tree tobacco
Physalis ixocarpa Brot. ex Hornem., Mexican groundcherry
Solanum nigrum L., black nightshade
Solanum sarachoides Sendt. In Mart., hairy nightshade

Tamaricaceae
Tamarix chinensis Lour, fivestamen tamarisk
Tamarix ramosissima Ledeb., saltcedar

Ulmaceae
Ulmus pumila L., Siberian elm

Verbenaceae
Phyla nodiflora (L.) Greene, turkey tangle frogfruit
Verbena tenuisecta Briq., South American mock vervain
Vitex agnus-castus L., lilac chastetree

Zygophyllaceae
Peganum harmala L, African rue
Tribulus terrestris L., goathead
Zygophyllum fabago L., Syrian beancaper

Angiosperms: Monocotyledoneae

Cyperaceae
Cyperus esculentus L., chufa flatsedge
Cyperus rotundus L., nutgrass

Hydrocharitaceae
Egeria densa Planch, Brazilian waterweed

Liliaceae
Asparagus officinalis L., garden asparagus
Asphodelus fistulosus L., onionweed
Muscari neglectum Guss. ex Ten., starch grape hyacinth

Poaceae
Aegilops cylindrica Host, jointed goatgrass
Agropyron cristatum (L.) Gaertn. ssp. *cristatum*, crested wheatgrass
Agropyron cristatum (L.) Gaertn. ssp. *desertorum* (Fisch. ex Link) Löve, crested wheatgrass
Agropyron cristatum (L.) Gaertn. ssp. *fragile* (Roth) Löve, crested wheatgrass
Agrostis gigantea Roth, redtop
Agrostis stolonifera L., creeping bentgrass
Aira elegans Willd. ex Gaudin., annual silver hairgrass
Alopecurus geniculatus L., water foxtail
Alopecurus myosuroides Huds., foxtail
Alopecurus pratensis L., meadow foxtail
Anthoxanthum odoratum L., sweet vernalgrass
Apera interrupta (L.) Beauv., apera
Aristida oligantha Michx., oldfield threeawn
Arrhenatherum elatius (L.) J. & C. Presl, tall oatgrass
Arundo donax L., giant reed
Avena barbata Pott ex Link, slender oat
Avena fatua L. var. *fatua*, wild oat
Avena fatua L. var. *sativa* (L.) Hausskn., wild oat
Bothriochloa bladhii (Retz.) S. T. Blake, Australian bluestem
Bothriochloa ischaemum (L.) Keng var. *ischemum*, yellow bluestem
Bothriochloa ischaemum (L.) Keng var. *songarica* (Rupr.) Celerier & Harlan, King Ranch bluestem
Briza minor L., little quakinggrass
Bromus brizaeformis Fisch. & Mey., rattlesnake chess
Bromus catharticus Vahl, rescuegrass
Bromus diandrus Roth, ripgut brome
Bromus hordeaceus L., soft brome
Bromus inermis Leyss., smooth brome
Bromus japonicus Thunb. ex Murray, Japanese brome
Bromus rubens L., foxtail brome
Bromus secalinus L., rye chess
Bromus sterilis L., poverty brome
Bromus tectorum L., cheatgrass
Catapodium rigidum (L.) C. E. Hubb., ferngrass
Cenchrus echinatus L., southern sandbur
Chloris submutica Kunth, Mexican windmillgrass
Chloris virgata Sw., showy windmillgrass
Cynodon dactylon L., Bermudagrass
Dactylis glomerata L., orchardgrass
Dactyloctenium aegypticum (L.) Willd., crowfootgrass
Deschampsia danthonioides (Trin.) Munro, annual hairgrass
Digitaria ciliaris (Retz.) Koel., southern crabgrass
Digitaria eriantha Steudel, pangola grass
Digitaria ischaemum (Schreb.) Muhl., smooth crabgrass
Digitaria sanguinalis (L.) Scop., hairy crabgrass
Echinochloa colona (L.) Link, junglerice
Echinochloa crus-galli (L.) Beauv., barnyardgrass
Echinochloa crus-pavonis (Kunth) Schult., barnyardgrass
Eleusine indica (L.) Gaertn., goosegrass
Elymus elongatus (Host) Runem. ssp. *elongatus*, tall wheatgrass
Elymus elongatus (Host) Runem. ssp *ponticus* (Podp.) Melderis, tall wheatgrass
Elymus hispidus (Opiz) Melderis ssp. *hispidus*, intermediate wheatgrass
Elymus hispidus (Opiz) Melderis ssp. *barbulatus* (Schur), pubescent wheatgrass
Elymus repens (L.) Gould, quackgrass
Eragrostis barrelieri Daveau, Mediterranean lovegrass

(Continued on page 7, Aliens)

(Aliens, Continued from page 6)

Eragrostis cilianensis (All.) Vign. ex Janchen, stinkgrass
Eragrostis curvula (Schrad.) Nees var. *conferta* Nees, Boer lovegrass
Eragrostis curvula (Schrad.) Nees var. *curvula*, weeping lovegrass
Eragrostis lehmanniana Nees, Lehmann lovegrass
Eragrostis superba Peyr., Wilman lovegrass
Eremopyrum triticeum (Gaertn.) Nevski, annual wheatgrass
Festuca arundinacea Schreber, tall fescue
Festuca pratensis Huds., meadow fescue
Festuca trachyphylla (Hack.) Krajina, hard fescue
Hackelochloa granularis (L.) Kuntze, Hackelochloa
Hierochloe odorata (L.) Beauv., sweetgrass
Holcus lanatus L., velvetgrass
Hordeum arizonicum Covas, Arizona barley
Hordeum murinum L. ssp. *glaucum* (Steud) Tsvelev, wall barley
Hordeum murinum L. ssp. *leporinum* (Link) Arcangeli, hare barley
Hordeum vulgare L., barley
Lolium perenne L. var. *perenne*, perennial ryegrass
Lolium perenne L. var. *aristatum* Willd., Italian ryegrass
Lolium temulentum L., poison darnel
Panicum amarum Ell., bitter panicum
Panicum antidotale Retz., blue panicum
Panicum coloratum L., Kleingrass
Panicum dichotomiflorum Michx., fall panicum
Panicum hians Ell., gaping panicum
Panicum milaceum L., broomcorn millet
Paspalum dilatatum Poir., Dallisgrass
Pennisetum ciliare (L.) Link, buffelgrass
Phalaris angusta Nees ex Trin., canarygrass
Phalaris canariensis L., canarygrass
Phalaris minor Retz., canarygrass
Phleum pratense L., timothy
Pleuraphis rigida Thurber in S. Wats., big galleta
Poa annua L., annual bluegrass
Poa arachnifera Torr., Texas bluegrass
Poa bulbosa L., bulbous bluegrass
Poa compressa L., Canada bluegrass
Poa pratensis L. *pratensis* phase, Kentucky bluegrass
Poa trivialis L., rough bluegrass
Polypogon interruptus Kunth., ditch polypogon
Polypogon monspeliensis (L.) Desf., rabbitfoot grass
Polypogon viridis (Gouan) Breistroffer, water polypogon
Psathyrostachys juncea (Fischer) Nevski, Russian wildrye
Puccinellia distans (L.) Parl., Parrish's alkaligrass
Rhynchelytrum repens (Willd.) C. E. Hubb., Natal grass
Saccharum ravennae (L.) Murray, Ravennagrass
Schismus arabicus Nees, Mediterraneangrass
Schismus barbatus (L.) Thell., Mediterraneangrass
Schlerochloa dura (L.) Beauv., hardgrass
Secale cereale L., rye
Setaria adhaerens (Forrskal) Chiov., clinging bristlegrass
Setaria italica (L.) Beauv., foxtail millet
Setaria magna Griesb., giant foxtail
Setaria pumila (Poir.) Roem. & Schult., yellow bristlegrass
Setaria verticillata (L.) Beauv., hooked bristlegrass
Setaria viridis (L.) Beauv., green bristlegrass
Sorghum bicolor (L.) Moench ssp. *bicolor*, sorghum
Sorghum bicolor (L.) Moench ssp *drummondii* (Steud.) DeWet, Sudangrass
Sorghum halepense (L.) Pers., Johnsongrass
Sporobolus neglectus Nash, puffsheath dropseed
Sporobolus vaginiflorus (Torr. ex Gray) Wood, poverty dropseed
Tragus berteronianus Schult., spike burgrass
Tridens cragrostoides (Vasey & Scribn.) Nash, tridens
Tridens flavus (L.) A.S. Hitchc., purpletop
Triticum aestivum L., wheat
Urochloa panicoides Beauv., liverseed grass
Vulpia bromoides L., Brome, six weeksgrass
Vulpia myuros (L.) K. C. Gmelin var. *myuros*, rattail sixweeksgrass
Vulpia myuros (L.) K. C. Gmelin var. *hirsuta* Hack., rattail sixweeksgrass
Zea mays L. ssp. *mays*, maize

Potamogetonaceae
Potamogeton crispus L., curly pondweed

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[See New Mexico Rare Plants, presented by the NM Rare Plant Technical Council: http://nmrareplants.unm.edu]

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Kelly Allred
Range Plant Speciolist

What's In A Name?

It's helpful and even satisfying for us to know the meaning of the scientific names of New Mexico plants. We delight in knowing that *Iris* means *rainbow* (Greek), commemorate the great Sweedish naturalist with *Linnaea* (Latin), nod knowingly with *Dracocephalum* (dragon's head, Greek), scratch our heads a bit over *Gaura*, meaning superb (Greek), and take comfort that *Alyssum* (without madness, Greek) was recommended as a cure for rabies. But not all generic names are so meaningful. It is perfectly acceptable and within the rules to rearrange the letters of a closely related genus to arrive at a new name. Thus we have *Sibara* from *Arabis* (Cruciferae), *Sartidia* from *Aristida* (Gramineae), *Litrisia* from *Liatris* (Compositae), *Milula* from *Allium* (Liliaceae), and *Leymus* from *Elymus* (Gramineae). Some untapped anagrams for future botanists are *Spoilage* from *Aegilops*, *Precis* from *Crepis*, *Acid-rio* from *Dicoria*, *Septic* from *Pectis*, *Altercate* from *Tetraclea*, and *Ada-sue* from *Suaeda*.

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A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University.

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THE GENUS *PLANTAGO* (PLANTAGINACEAE) IN NEW MEXICO

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PLANTAGO L. PLANTAIN, RIBGRASS

Annual or perennial, taprooted herbs; acaulescent or short-stemmed; leaves basal or crowded near the base, simple, entire or remotely dentate; inflorescence a bracteate spike on a naked scape; flowers regular, 4-merous as to sepals and petals; corolla sympetalous, scarious, often translucent, persistent; stamens 4 or 2 when present; ovary superior, biolocular; style 1, terminal; fruit a membranous, circumcissile capsule; seeds few to many, mucilaginous when wet.

A large cosmopolitan genus of approximately 250 species. Mucilage from the seeds of several species is used as a laxative under the name psyllium. Occurs in all New Mexican vegetation communities from alpine down to desert. Most of our species are easily distinguished, but variation in some annual species is extreme enough to cause problems in identification. (Classical Latin name, from *planta*, the sole of the foot.)

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Key to the *Plantago* Species in New Mexico

1a Plants perennial (sometimes blooming in the first year)... 2
1b Plants annual (sometimes robust, but not persisting)... 5

2a Leaves broad, the well-defined blade broadly elliptic or cordate, mostly 1.3 to 2.3 times longer than wide; seeds 18-30... ***P. major***
2b Leaves lanceolate, oblanceolate, or narrowly spatulate, blades mostly 2.5 to 10 times longer than wide; seeds 2-4... 3

3a Outer 2 sepals (adjacent the bract) connate, appearing as a 2-veined, entire or notched sepal; bracts acuminate or caudate-acuminate; seeds 2... ***P. lanceolata***
3b Sepals distinct; bracts obtuse to acute; seeds 2-4... 4

4a Plants conspicuously brown-fibrous woolly at the crown among the old leaf bases; spikes elongate, mostly 5-20 cm at maturity; alkaline wet places at low to moderate elevations... ***P. eriopoda***
4b Plants sparsely and inconspicuously brown-fibrous at the crown among the old leaf bases; spikes short, mostly <5 cm long at maturity; nonalkaline wet meadows at high elevations... ***P. tweedyi***

(Continued on page 2, Plantago)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(Plantago, Continued from page 1)

5a Sepals and bracts glabrous; seeds mostly 4-8... ***P. elongata***
5b Sepals and bracts villous or hirsute; seeds 2... 6

6a Bracts at base of spike not keeled; corolla lobes ovate to oblong, spreading or reflexed during and after flowering... 7
6b Bracts at base of spike keeled; corolla lobes lanceolate, usually erect and folded together before and after flowering... 10

7a Corolla lobes 3.5-4 mm long; longest hairs on the upper part of the scape spreading at right angles; spikes usually 8-12 mm wide... ***P. helleri***
7b Corolla lobes about 1.5-3.4 mm long; longest hairs on the upper part of the scape ascending or appressed; spikes 4-8 mm wide... 8

8a Bracts linear to linear-lanceolate, as long or much longer than the sepals; plants pale yellow-green or gray-green upon drying... ***P. patagonica***
8b Bracts oblong to ovate, shorter than the sepals; plants olive brown or dark yellow-green upon drying... 9

9a Mature leaves acute, villous to sparsely sericeous (rarely glabrate); corolla lobes 1.5-2.5 mm long... ***P. argyraea***
9b Mature leaves obtuse or acute; glabrous or glabrate; corolla lobes 2.2-3.4 mm long... ***P. wrightiana***

10a Outer sepals with green midvein extending beyond the scarious margins; bracts (2.2) 2.8-5.4 (5.8) mm long; seeds 1.5-3 mm long, reddish, usually with a hyline margin on at least one side... ***P. rhodosperma***
10b Outer sepals with green midvein not extending beyond scarious margins; bract 1.8-2.8 mm long; seed 1.0-1.7 mm long, yellow-brown, hyline margin lacking... ***P. virginica***

The following taxa were included by Martin and Hutchins (1981, A Flora of New Mexico) as potentially occurring in this state, but the specimen evidence remains lacking: *Plantago aristata, P. heterophylla, and P. hirtella* var. *galeottiana*..

Plantago argyraea Morris, SILVERY PLANTAIN. Annual; leaves linear to linear-oblanceolate, 2-12 cm long, 1-6 mm wide, villous to sparsely sericeous (rarely glabrate), dark green (drying greenish brown); seapes strigose, erect; spikes 1-8 cm long; bracts villous, oblong to ovate-lanceolate, shorter than sepals, usually scarious margined; sepals villous (sometimes sparsely so), scarious margined; corolla lobes spreading or reflexed, 1.5-2.5 mm long; seeds 2, dark brown to black, 3-4 mm long. Flowers Jul-Sep.

Common on dry soils in piñon-juniper woodland and ponderosa pine forest in the western half of NM; eastern AZ.

Plantago elongata Pursh [*P. bigelovii* Greene, *P. pusilla* Nutt.] SLENDER PLANTAIN. Annual; leaves linear-filiform, 1-4 cm long, 0.5-1.5 mm wide, entire or sparsely denticulate, erect to decumbent, sparsely puberulent with thick appressed hairs, scapes slender, erect or decumbent, spikes slender, loosely to rather closely flowered; bracts glabrous, somewhat fleshy, ovate-acute, 1-2 mm long, lower usually keeled; sepals glabrous; corolla lobes small, 0.5-1 mm long, spreading or reflexed; stamens (when developed) usually 2; seeds (3) 4-8 (10), dark brown to black, pitted, 0.5-1.7 mm long. Flowers Apr-May

Barely entering NM at the northwestern and southwestern corners of the state on alkaline silts or clays in playas and other low-lying areas in piñon-juniper woodland down to desert grassland; northern Mexico to FL and CA then north to southern Canada.

A variable and widely distributed species with numerous cytotypes and synonyms. In NM, the southern population (Hidalgo, Luna) produces 8 seeds/capsule, frequently has toothed leaf margins and has been placed in *P. bigelovii* subsp. *californica*. Our northern plants of *P. elongata* (San Juan, Rio Arriba) are easily distinguished by an average of 4 seeds/capsule and consistently entire leaf margins. In CA, these taxa are confluent and cannot be separated.

Plantago eriopoda Torrey, ALKALI RIBGRASS. Perennial; crown more or less covered with brown woolly fibers; plants sparsely pubescent with septate hairs; leaves lanceolate, coriaceous or somewhat fleshy, 4-5 nerved with prominent veins, 4-15 cm long, 0.7-2.5 cm wide; scapes 1 to several, hollow, exceeding the leaves, 8-25 cm long; spikes loosely flowered, 5-20 cm long at maturity; bracts broadly ovate with narrow scarious margins, subequal to the calyx, glabrous or minutely fringed with hairs; calyx lobes oval, about 2 mm long; corolla lobes spreading, 1-1.5 long; stamens 4; capsules circumscissile just below the middle; seeds 2-4, brown to black, finely pitted 2-2.5 mm long. Flowers Jun-Aug.

Moist, alkaline soils in cienegas and mountain valleys. Presently known in NM only from the Zuni Mountains of McKinley County; Rocky Mountain and northern plains states through western Canada; disjunct to Quebec and Chihuahua.

Plantago helleri Small, HELLER'S PLANTAIN. Annual; leaves linear-oblanceolate, villous or glabrate in age, 1-6 cm long, 2-8 mm wide; scapes erect, strigose, the longest hairs below the spike spreading or right angles; spikes compact, 8-12 mm thick, conspicuous because of the large corolla lobes; bracts linear, surpassing the calyx, villous; calyx lobes oval, villous, about 4 mm long, margins scarious; corolla lobes spreading, orbicular, 3.5-4 mm long, seeds 2, brownish, 3-4 mm long. Flowers Mar-May.

Silty soils and dry limestone slopes in southeastern NM; TX.

Easily distinguished by its thick spikes of relatively large flowers.

Plantago lanceolata L., ENGLISH PLANTAIN. Perennial; crown covered with tan woolly fibers; leaves 3-7 nerved with prominent veins, sparsely villous or glabrous, narrowly elliptic to lanceolate, 7-35 cm long and mostly 1-4 cm wide; scapes erect, striate, strigose, exceeding the leaves; spikes dense, ovoid-conic at first and cylindrical when mature, about 1 cm thick, 2-8 cm long; bracts acuminate to caudate acuminate; sepals villous-ciliate toward the tip, the two outer ones connate with separate midveins, this structure entire or merely notched at the summit; corolla lobes spreading or reflexed, 2-2.5 mm long; stamens 4, exserted, conspicuous; seeds 2, black, about 2 mm long. Flowers May-Aug.

Native of Eurasia. In NM, a statewide weed of roadsides, pastures, and other disturbed sites that are not too dry.

(Continued on page 3, Plantago)

(Plantago, Continued from page 2)

Plantago major L., COMMON PLANTAIN. Fibrous-rooted perennial (often blooming the first year); glabrous or glabrate; leaves petiolate, blades broadly elliptic or cordate, entire or irregularly toothed, 4-18 cm long, 2.5-11 cm wide, 3-7 nerved with prominent veins; scapes 5-25 cm long; spikes dense, narrow-elongate; < 1 cm wide, 5-30 cm long; bracts ovate, margins scarious, about 2 mm long; calyx lobes ovate margin scarious, about 1.5 mm long; corolla lobes reflexed, lanceolate, < 1 mm long; stamens 4, exserted; seeds 10-30, brown or black, about 1 mm long. Flowers May-Sep.

A cosmopolitan weed of moist soils along streams, roadsides and in lawns and gardens. The weedy form throughout NM is introduced from Europe. A succulent-leaved form in alkaline or saline habitats may be native to western North America.

Plantago patagonica Jacq., [*P. oblonga* Morris, *P. picata* Morris, *P. purshii* Roemer & Schultes, *P. spinulosa* Dcne.] WOOLY PLANTAIN. Annual; leaves linear-oblanceolate, villous, gray or pale green, erect or spreading, 1-12 cm long, 1-6 mm wide; scapes strigose, erect or spreading; spikes dense, cylindrical, 0.5-10 cm long; bracts villous, linear or lanceolate, 2-7 mm long; calyx lobes villous, oblanceolate, about 2 mm long; corolla lobes spreading to reflexed, oblong, 1-2 mm long; seeds 2, brown, about 2 mm long. Flowers Mar-Jul.

Common throughout NM on dry soils in deserts, grasslands and piñon-juniper woodland; western Canada to northern Mexico then amphitropically disjunct to Argentina and Chile. This is the most common and abundant plantain in NM.

Plants with elongate and exserted bracts approach the more eastern *P. aristata* and have been separated as variety *spinulosa*. Long-bracted plants are common in southern NM and sporadic in other parts of the state. This taxonomic variety cannot be maintained as all intermediate bract lengths can be found within or near these populations. Other named variations based upon scape length, stature, pubescence, or leaf shape are also inconsistent and not maintained in most recent treatments. Should the North American plants ever be infraspecifically distinguished from the South American plants, the name *P. patagonica* var. *gnaphaloides* is available for the former.

Plantago rhodosperma Dcne., RED-SEEDED PLANTAIN. Annual; leaves rosulate, elliptic to oblanceolate, acute or obtuse at the apex, pubescent, 4-27 cm long, 1-4.7 cm wide, margins entire or remotely dentate; scapes hollow, hirsute with stiff spreading septate hairs; bracts lanceolate to ovate, keeled, (2.2) 2.8-5.4 (5.8) mm long, hirsute, margins scarious and ciliate; calyx lobes obovate, keeled, about 1 mm long, green midvein outer sepals extending beyond scarious margins; corolla lobes lanceolate, 2-4 mm long, usually erect and folded together (cleistogamous), sometimes spreading (chasmogamous); seeds 2, reddish with narrow hyline margin usually present on at least one side, 1.5-3 mm long. Flowers Apr-Jul.

Occasional in silty soils of low-laying areas in desert grasslands of southern and east-central NM; TN to KS then south to northern Mexico.

Plantago tweedyi A. Gray, TWEEDY'S RIBGRASS. Similar to *P. eriopoda*, but smaller; crown not conspicuously brown-fibrous woolly; leaves thin; scapes not exceeding, or barely surpassing, the leaves; spikes short and rather dense, 2-7 cm long at maturity, 5-8 mm thick. Flowers Jun-Aug.

Nonalkaline meadows and moist slopes of alpine and subalpine elevations of north-central NM; northern AZ then north to MT.

Plantago virginica L.. PALE-SEEDED PLANTAIN. Very similar to *P. rhodosperma*, bracts 1.8-2.8 mm long; green midvein of outer sepals not extending past scarious margins; seeds 2, usually yellowish brown, hyline margins lacking, 1-1.7 mm long. Flowers Apr-Jun.

MA to WI then south to FL and TX. Possibly introduced to NM where it has been collected only once in Doña Ana County.

Doubtfully distinct from *P. rhodosperma*. Seed size, color, and hyline margin characteristics overlap in both taxa.

Plantago wrightiana Dcne. WRIGHT'S PLANTAIN. Annual; leaves linear-oblanceolate, apices obtuse or acute, dark yellow-green, glabrous or glabrate, entire to remotely denticulate, 7-22 cm long, 2-10 mm wide; scapes erect, strigose; spikes dense, cylindrical, to 9 cm long; bracts ovate, shorter than the calyx, villous, margins scarious and entire; calyx lobes obovate, villous, margins scarious and entire; corolla lobes spreading to reflexed, obovate 2.2-3.4 mm long; seeds 2, olive brown or pinkish gray, 2.2-4.1 mm long. Flowers May to Jul.

Native to OK, TX, and adjacent Coahuila. Possibly introduced to NM where it has been collected only once in Sierra County. Most reports of this species in NM and AZ are attributable to sporadic, nearly glabrous forms of *P. argyraea*. These two species are very similar and difficult to distinguish with overlapping, qualitative characteristics. *Plantago wrightiana* is generally less pubescent, and a larger plant with larger flowers. Its leaves are usually fewer, dark yellow-green, and more likely to be obtuse at the apices. *Plantago argyraea* is usually villous or strigulose, and a generally smaller plant with more numerous acute leaves that dry dark olive brown.

New Plant Distribution Records

— Bob Sivinski [P.O. Box 1948, Santa Fe, NM 87504]

Senecio quercetorum Greene [*Packera quercetorum* (Greene) C. Jeffery] (Asteraceae): Catron Co.: Whitewater Box, W. Martin 4721 (UNM).

Senecio neomexicana Gray var. ***toumeyi*** (Greene) T.M. Barkley [*Packera neomexicana* (Gray) W.A. Weber & Löve var. *toumeyi* (Greene) Trock & T.M. Barkley] (Asteraceae): Hidalgo Co.: Ivey 310 (UNM); Grant Co.: Castetter 9057 (UNM).

—Kelly Allred [MSC Box 3-I, New Mexico State University, Las Cruces, NM 88003]

Leymus cinereus (Scribn. & Merr.) Löve (Gramineae): San Miguel Co.: Cowles, adventive along edge of road (SR 63) at confluence of Pecos River and Winsor Creek, N35° 48.716' W105° 39.541', 8150 ft, 29 July 2000, K. Allred 7854 (NMCR). This species was reported by Martin & Hutchins (Flora of New Mexico, 1980), but no validating specimens have been found until now. It remains to be seen whether this small population of only a few plants will maintain itself along the roadside.

— Brown & Coleman [see Botanical Literature of Interest]

Schiedeella arizonica P.M. Brown (Orchidaceae): several stations in Grant, Lincoln, and Otero counties; replaces what has passed as *Schiedeella parasitica* in New Mexico.

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Kelly Allred

Botanical Literature of Interest

TAXONOMY AND FLORISTICS:

Anderson, E.F. 2001. **The Cactus Family.** Timber Press, Portland, Oregon. 776 pp. [looks to be a classic]

Brown, P.M. & R.A. Coleman. 2000. ***Schiedeella arizonica*: A new species from the southwestern United States.** North American Native Orchid Journal 6:3-17.

Darigo, C.E. & K.W. Allred. 2001. **Mosses of New Mexico — County checklist.** Evansia 18(1):1-18.

Keller, C.F. 2000. **White Rock Canyon and its Riparian Areas.** Los Alamos National Labs Publ. LA-UR-99-6260.

Kiger, R.W. & D.M. Porter. 2001. Categorical Glossary for the Flora of North America Project. Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, PA. 165 pp.

Olmstead, R.G., C.W. dePamphilis, A.D. Wolfe, N.D. Young, W.J. Elisons, P.A. Reeves. 2001. **Disintegration of the Scrophulariaceae.** Amer. J. Bot. 88(2):348-361. [the title says it all]

Thorn, R.F. 2000. **The classification and geography of the flowering plants: dicotyledons of the class angiospermae: (subclasses magnoliidae, ranunculidae, caryophyllidae, dilleniidae, rosidae, asteridae, and lamiidae).** Bot. Rev. 66(4): 441-647.

Welsh, S.L. 2001. **Revision of North American species of *Oxytropis* DC. (Leguminosae).** Publ. by the author <SLSLWELSH@aol.com>.

MISCELLANEOUS:

Heil, K.D. 2000. **A Field Guide to the Invasive and Poisonous Plants of the Four Corners.** San Juan College & Bureau of Land Management, Farmington District.

RARE, THREATENED, AND ENDANGERED PLANTS:

[See New Mexico Rare Plants, presented by the NM Rare Plant Technical Council: http://nmrareplants.unm.edu]

WEB SITES OF INTEREST:

Index to American Botanical Literature: http://www.nybg.org/bsci/iabl.html

Kew Record of Taxonomic Literature: http://www.rbgkew.org.uk/kr/KRHomeExt.html [a very useful resource for literature searches and keeping up-to-date]

Research and Collecting Permits from National Park Service: http://science.nature.nps.gov/servlet/Prmt_PublIndex

Southwest Exotic Mapping Program: http://www.usgs.nau.edu/swemp/

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A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University.

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RUPERT C. BARNEBY (1911-2000): A MEMOIR

Richard Spellenberg

Department of Biology, New Mexico State University, Las Cruces, NM 88003-8001

[The following appeared in Sida 19(3):745-751. 2001. I am grateful to Barney Lipscomb for permission to use the memoir here. Rupert Barneby's contribution to New Mexico botany is understood and appreciated almost daily by those who study the flora. — R. S.]

"Dear Rich: Thanks so much for your letter of July 13, for the good news in it, and for the little loco from near St. George, Utah, which brought a special joy (your no. *3182*). I feel sure that you have run it correctly to *A. musimonum* – it's simply not possible to squeeze a flower so short, a calyx so distinctly campanulate, into *A. amphioxys*.... What gives me a particular boot about your plants is this: in 1942 I collected on limestone in Mokiak Pass s of St. George an astragalus at the time only in young flower which seemed to me almost certainly *A. musimonum*....This collection (my no. *4321*) was cited provisionally in the protolog..., but later I was never able to locate the material for comparison. ...you can imagine the satisfaction that your collection brings to me, the loss of my own having stuck in my mind like a splinter in the foot, healed over but still and always a cryptic nag" (Aug. 2, 1973). I received an essay, essentially, about a single collection we had made in Mokiak Pass on a circuitous return from a collecting trip with two graduate students to Death Valley. The collection was not particularly significant, but still one that elicited a letter so gratifying to a young botanist, a letter that simultaneously provided a confirmation on identification of a little-known species from a world's expert on this immense genus and provided images of Rupert Barneby and Dwight Ripley three decades earlier, during a great world war, isolated in southwestern Utah sniffing out locoweeds and other marvelous flora in a very open West. As do others, I treasure my letters and memories from Rupert, always so positive with regard to the material at hand, so encouraging, and so expressive. The specimens were "run," of course, in his at-that-time recently published "Atlas of North American *Astragalus*" (1964).

Rupert Barneby was born on October 6, 1911, at Trewyn, Monmouthshire, a 17th century house in England nearly on the Wales border. He died at 89 years old at 5:10 PM, Tuesday, December 5, 2000, at the Jewish Home for the Aged in New York, where he resided subsequent to a mild stroke a few months earlier. Until the stroke, he was in his office nearly every day, continuing to work with his botany, at the last "primarily identifying the gazillions of specimens sent to him for det." (Jackie Kallunki). The world has lost a tremendous botanical taxonomist and grand human being

Early in his childhood Rupert was fascinated with plants and insects and fossils, and two aunts gave books to him that encouraged his interest. At 14 Rupert excelled in producing a herbarium collection in a local naturalist's club competition. Some of his identifications where challenged. Rupert knew he was right, and came to the realization that he had an independent intellect. Not only from books does one gain knowledge, but real learning could come from observing the natural world. In public school, at Harrow, at age 14, he met Dwight Ripley, two years older, who had a knowledge of plant scientific names. This deeply impressed Rupert, and from there a life-long friendship grew. Officials were scandalized, Rupert enjoyed telling, by the close relationship that developed, not so because of a schoolboy romance, but beeause Mr. Ripley was American. After boarding school Rupert went to Grenoble University in France, and to Cambridge (Trinity College), where he finished a B.A. in History and Modern Languages before he was 21. Mr. Ripley attended Oxford. While at university they went on joint plant-hunting trips to Spain, the Mediterranean, and northern Africa, bringing back plants to grow in the rock garden at the Ripley estate at Sussex, a garden that ultimately grew to contain 1138 species. As was the case for other great biologists of the past few centuries, Rupert's father resisted his study of botany; it was unsuitable for a young man. Suitable occupations were the army, navy, or church, or as they encouraged, a career in diplomacy. Rupert relates, "I was unsuitable for the army or navy and I hated the church. That's really why I came to America." Rupert was disinherited; Mr. Ripley's personal fortune paid the bills.

The relationship between Rupert Barneby and Dwight Ripley was expressed largely in the de-

(Continued on page 2, Barneby)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(Barneby, Continued from page 1)
velopment and appreciation of their garden. In 1939 they published together a catalogue of the plants growing at their house, The Spinney, in Waldron, Sussex, England. *Carlina barnebiana* Burtt & P. H. Davis, a thistle from Crete, dates from this period of their explorations. Overnight guests at the Ripley/Barneby house might very well find a bud vase on their headboard placed by Rupert, with a small bouquet of plants in their families of interest, taken from the garden. After 50 years of sharing their enthusiasm for botany and the beauty of plants, Rupert lost his life-long friend; Mr. Ripley died of complications arising from alcoholism.

Rupert arrived in the United States in 1937, first living in Hollywood, later moving to New York. He established permanent residency in 1941. He and Ripley continued their plant hunting in the Ameriean West. In addition to collecting living plants for their rock garden, Rupert also prepared herbarium specimens, many of them representing undescribed taxa from that still poorly known region. Among his several newly made friends in western botany, Alice Eastwood and John Thomas Howell encouraged Rupert to publish his first new species in 1941, from Yucca Flat in Nevada, *Cymopterus ripleyi*. The article appeared in Leaflets of Western Botany, a journal that they supported financially for many years. In the same issue Eastwood described *Castilleja barnebyana* in honor of her friend who had deposited many collections at CAS. From that beginning he, often with others, named more than 1160 plant taxa new to science (*Mimosa* 217; *Astragalus* 118; *Cassia* 112; *Senna* 98; *Dalea* 61; *Chamaecrista* 50; etc. [NYBG database]) in 147 publications. In all western states, plant taxonomists and eonservationists deal with Barneby names daily. In New Mexico, for example, he authored 26 plant taxa (23 *Astragalus*), and made new combinations in names for 44 more (K. Allred, NMCR database). A search of Index Kewensis on CD-ROM in 1997 listed 2045 taxa with Rupert as publishing author. Many of the drawings in his publications are by his own hand.

Rupert arrived at the New York Botanical Garden in the early 1950's as a visiting scholar to consult the herbarium. He soon became an honorary curator in Western botany. In 1959 he was given an official position to help Howard Irwin, a curator of NYBG, proceed with his studies of *Cassia*. In 1989 he was named curator of systematic botany, the first and only paying job he ever held. He consulted for Brittonia, particularly to vet Latin descriptions for new taxa, and to critically read manuscripts. His special interests were xerophytic floras, taxonomy of the Fabaceae, neotropical Menispermaceae. His extensive knowledge of the Fabaceae resulted in thousands of specimens being sent to him for determination. These gifts have pushed the legume collection at NYBG beyond 270,000 specimens.

Rupert's ability to discern differences and recall detail, and to deal with cards and sheets of notes in extensive files while working on a typewriter, was matched by his truly astounding ability to synthesize. "Rupert Barneby was a great student of plants in the style of George Bentham and the other encyclopedic workers of the nineteenth century, who would tirelessly analyze all we knew about enormous groups of plants and reduce that knowledge to lucid prose, working day after day, month after month, and year after year" (Peter Raven, as cited in The New York Times). So true; chatting over tea on one of my visits to NYBG I learned that he spent the best part of six months dealing with the variation and synonymy of *Lupinus argenteus* Pursh for the Intermountain Flora (Fabales, Vol. 3,B, 1989). His ability to organize and synthesize massive amounts of detail, unrelentingly moving great projects toward completion, have given us magnificent taxonomic syntheses of *Oxytropis* (1952), *Astragalus* (1964), *Cassia* (1977, 1978,) and *Cassiinae* (1982), *Dalea* and allied genera (1977), Mimosaceae (1996, 1998). Of his 147 botanical publications, 111 are in the Fabaceae. In all, they comprise more than 6,600 printed pages.

I am grateful to Stan Welsh for the following passage, from his Jan. 16, 2001, presentation at NYBG at Rupert's memorial service. It reflects upon Rupert's love of the West, of the field, of plants; on his humor, on his valued involvement with colleagues, and his view of himself relative to the "real" world. Writes Stan, "Field work was part of Rupert's Psyche. He spent a huge amount of time collecting plants, becoming acquainted with them in nature. And, he had an almost mystical quality of being able to ferret out novelties over vast expanses of the American West. His field experiences were sometimes interrupted by real stupidities, as when he was accosted by police in Arkansas in 1963. 'A suspected murderer was known to be in flight, in a Jeep, and naturally anyone in an out of state Jeep [Rupert's favorite field vehicle] was it. It was a nasty experience being forced out of the car at gun point by a porcine state cop of the lowest (almost Hollywood) style – huge belly, flabby cheeks, cigar-butt clamped into a tiny red mouth – and then have all my possessions pawed over. Only botanists believe in anything so otherworldly as a botanist, and I do sort of sympathize with the Law faced by Linnaeus; one cannot fairly expect comprehension or sympathy.' The quote is from a letter to Isely (16 July 1965), and was in response to Duane's having been held in jail for some hours by Colorado police, him looking suspiciously like a bank robber. Botanists are a suspicious bunch."

Rupert understood and used Latin well, consulting for Brittonia and, upon request, helping those less skilled in the idiom to prepare proper descriptions and diagnoses. He could also be relied upon to provide opinions on the use of Latin in botany. For example, in New Mexico a number of us were preparing a review of plant species of conservation concern in the state, and we encountered a specific epithet spelled in two ways in the literature. Solution: ask Rupert -- and we received: "Dear Rich: there's so much wrong with the epithet *mesa-verdae* that it would be best put on an index expurgatorius, but as we don't have a method for this it is best left exactly as originally written. Latinized Mesa Verde would be *mensa viridis*, giving a genitive *mensae-viridis*: simply putting a Latin genitive ending on one or both parts of the Spanish place name is not at all the same thing. If any tinkering were to [be] attempted it would be best to think of mesaverde as one word and make a genitive *mesaverdei*. In any case *mesae-verdae* is even more grotesque that the original monstrosity, which I would recommend you leave unaltered, as a warning to those who assume that they have mastered Chopin yet are at page one of Czerny's exercises" (14 March, 1988). I am so glad I asked.

The botanical community showed its appreciation for Rupert's magnificent contributions again and again by bestowing upon him prestigious awards. Rupert always struck me as a modest and unassuming individual, appreciative of the work of others, truly interested in their progress. Awards were not his cup of tea. In response during an interview regarding his receipt of the Millenium Botany Award at the International Botanical Congress in 1999, given for his lifetime of contribution to botany, he said, "I'm conscious of the prestige of the medallion, but hideously aware that it's an award for survival rather than for merit. It's part of the dismal cult of personality that started in Hollywood and now has infected the entire planet." Among other prestigious awards are the Distinguished Service Award, NYBG, 1965; the Henry Allan Gleason Award, an annual award from NYBG for an outstanding recent publication in plant taxonomy, ecology, or geography, in1980; the Asa Gray Award, American Society of Plant Taxonomists, for his contribution to systematic botany, in 1989; and the Engler Silver Medal, International Association of Plant Taxonomists highest honor for publications, for his monographic work in *Mimosa*, in 1993. He also was awarded an honorary doctorate degree in 1979 from The City University of New

(Barneby, Continued on page 3)

(Barneby, Continued from page 2)

York. In 1991, NYBG established the Rupert C. Barneby Fund for Research in Legume Systematics, a fund that continues to support research in this large, important family.

Rupert was an unofficial mentor and valued colleague to many. Duane Isely spent a sabbatical period with him at NYBG. Many, among them, Jim Grimes, Melissa Luckow, and André de Carvalho, recently have credited him as an inspiration in their lives. Ghillean Prance shares that "he will be remembered by thousands of colleagues for his uncommon generosity in sharing his inexhaustible knowledge and precise editorial skills." Stan Welsh writes to me, "...[he] was a master of words, works, and wonders. ...I miss him already." Cronquist wrote (Brittonia 33: 263. 1981), "Rupert is a gentleman and our resident classical scholar. If we need to know something about Latin, or Greek, or the niceties of English construction, we turn to him. He is kind, considerate, and learned. No polemicist, he can come up with the piquant *mot juste* when he chooses. We love him." The last speaks for so many. He had a delightful sense of humor, and loved a twist of the word. I often used a heading on my letters that involved a pun, "From the Herbarium, where...." In response I received a letter from Rupert, "From the New York Botanical Garden, where Brittonia waives the rules."

Volume 33 of Brittonia was dedicated to Rupert C. Barneby on the occasion of this 70th birthday, "in recognition of his devotion and intellectual commitment to plant systematics and his extraordinary depth and breadth of scholarship." In issue number three of that volume (33:263-274. 1981) is a series of letters from friends and colleagues from several nations. Each letter lauds his intellect, his accomplishments, and to a one, each expresses deep appreciation for the warmth of this extraordinary person. Joseph Kirkbride, who received his doctoral training at NYBG, brings back memories for many in one paragraph of his letter, "In his office, he had prepared a pot of tea and opened a package of biscuits. The tea was Jackson of Piccadilly, and the blend was 'Earl Grey's,' his favorite blend and brand of tea. That first 'tea time' was a marvelous experience. He put me at ease and kept the conversation going as he introduced himself. It is a landmark in my life." In a modern e-mail message to Pat Holmgren, Stan Welsh writes, "My trips to the garden were always highlighted by the morning and afternoon teas in his office." In my own trips to the Northeast, for professional reasons or otherwise, I would always make a special effort to arrive at Rupert's office to spend some time visiting with him over a cup of tea, each time a very special moment, the memories of which I now value so much.

In the same vein, in a communication from Noel Holmgren (Dec. 8, 2000), I learn that he also considers Rupert an important mentor in his development. He expressed what so many of us have felt in our interactions with Rupert. "There was no formal structure to the lessons, they were just part of relaxed, enjoyable conversation. He loved the same plants that I was becoming acquainted with. Each species of plant had a special character, be it the place it grew, its appearance, or its relationships to other species. He always gave the feeling that there was a spirit residing in each plant. You, Rich, have had these enlightening conversations with Rupert and so have so many others. So many, many others. I know this after years of being right across the hall from his office. In some ways his hearing loss was sometimes my gain. I could listen to his tea-time conversations with people, whenever I chose. His wonderful and suddenly explosive laughter. I'll really miss him." As will I, and so many others who Rupert so generously touched in his long and productive life.

Author's note: A number of individuals responded enthusiastically and helpfully when I asked for information regarding Rupert Barneby's great life. Clearly he was extremely important to, and well-liked by, them. I know there are dozens of others who have had exchanges with Rupert that they would have been happy to share. I am particularly grateful to Pat Holmgren, who forwarded numerous very valuable sources of facts and perspectives on his private and professional life. Particularly helpful were New York Times, 10 Dec 2000, NYBG Herbarium Sheet #254, 15 Oct. 1997, an NYBG press release, Dec. 8, 2000, and Rupert Barbeby's vitae.

New Plant Distribution Records

New records for New Mexico should be documented by complete collection information and disposition of a specimen (herbarium). Exotic taxa are indicated by an asterisk (*).

— Rob Soreng [U.S. National Herbarium, Smithsonian Institution, Washington, D.C. 20560]

Poa pratensis L. subsp. ***alpigena*** (Fries ex Blytt) Hiitonen (Poaceae): Colfax Co., Philmont Scout Ranch, Clear Creek Mt, origin of the Rincon Rayado, 11,200, ft, 24 July 1961, John Lussenhop 168 (Phil. Scout Ranch Herb.). [Det. by R. Soreng]

— Richard Spellenberg [Dept. Biology, New Mexico State University, Las Cruces, NM 88003]

Solanum dimidiatum Raf. (Solanaceae): Mora Co., NM hwy 120, 18 mi w of Roy & 6 mi e of Wagon Mound, 6300 ft, 3 July 1981, D. Ward, R. Spellenber, R. Soreng 81-269 (NMC). [Det. by S. Saufferer]

— Bob Sivinski [P.O. Box 1948, Santa Fe, NM 87504]

****Leontodon taraxacoides*** (Villars) Mérat (Asteraceae): Union Co., marshy edge of Clayton Lake, 20 July 1991, Hutchins 93092 (UNM). [native to Eurasia]

Ericameria parryi (A. Gray) Nesom & Baird var. ***affinis*** (A. Nels.) Nesom & Baird (Asteraceae): Rio Arriba Co., marine sediments south of El Vado Lake, T26N R3E Sec 15, 2150 m, R.C. Sivinski 5424 (UNM). [First NM record of this variety; verified against an L. C. Anderson specimen from central Colorado at UNM]

Artemisia pygmaea A. Gray (Asteraceae): Rio Arriba Co., marine sediments south of El Vado Lake, T26N R3E Sec 15, 2150 m, R.C. Sivinski 5490 (UNM). [2nd NM collection; previously known from Fort Wingate, McKinley County.]

— Kelly Allred [MSC Box 3-I, New Mexico State University, Las Cruces, NM 88003]

****Eragrostis frankii*** C.A. Meyer ex Steudel (Poaceae): Santa Fe Co., without locality, in 1847, Fendler 933 (MO). [The specimen has been verified by Leroy Harvey and Gerrit Davidse. It most likely represents a short-lived introduction coming in with hay and livestock that has not persisted since the early days of exploration in New Mexico.]

Euphorbia cyathophora Murr. (Euphrobiaceae): Doña Ana Co., Organ Mts, canyon above Dripping Springs, 7600 ft, 28 July 1952, D.B. Dunn 8395 (RSA); Eddy Co., Sitting Bull Falls Rec. Area, 22 Aug 1998, R.D. Worthington 27907 (RSA). [This is the full documentation of an earlier report without localities (Newsletter 4).]

— Susannah Johnson [1705 Brown Rd., Las Cruces, NM 88005]

****Vinca major*** L. (Apocynaceae): Doña Ana Co., Organ Mts, Dripping Springs Recreation Area (Boyd's Sanitorium), 6100 ft, 18 Sep 2001, S. Johnson 736 (NMCR). [Although there have been several attempts at eradication, the plants are persisting and maintain a thick growth in the shade of the cliff adjacent to the sanitorium.]

— Jim McGrath [P.O. Box 2605, Tijeras, NM 87059]

Potamogeton richardsonii (Benn.) Rydb. (Potamogetonaceae): Rio Arriba Co., Lagunitas Lakes, J. McGrath 212 (7 July 1999) & J. McGrath 235 (11 Aug 1999) (UNM) [verified by Don Les, Univ. of Connecticut].

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Botanical Literature of Interest

TAXONOMY AND FLORISTICS:

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Phemeranthus and *Talinum* (Portulacaceae) in New Mexico

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The plants known under the generic name "*Talinum*" for a long time have been highly confused in floras, commonly misidentified in herbaria, and generally confusing for botanists and field biologists. This is difficult to explain, as most of the species are well defined and easily recognized.

Since 1985, I have studied and propagated living material from type locations of nearly all of the species and have examined type specimens of most species. In addition, I have studied populations in the field and cultivated multiple collections of nearly all species.

Working with this group of plants quickly led to the realization that the many of the "Talinums" I had been studying were not *Talinum* species at all.

The true *Talinum* species are basically tropical or subtropical plants with flat leaves. They show very different morphological and reproductive features from the primarily northern and mountain species with terete leaves.

I was not the first to notice this distinction. Rafinesque described the first terete-leaved species as *Phemeranthus* in 1801. This was *Phemeranthus teretifolius*. In 1814 Pursh transferred this species to *Talinum*.

Since that time, numerous terete-leaved species were named; however, the epithet *Phemeranthus* was ignored, as was generally the case with Rafinesque's work, and the species were placed in *Talinum*.

In recent years, much work has been done on the phylogeny and relationships of the genera of the Portulaeaceae. The methods vary from author to author and range from simple observational comparisons, through cladistic analysis, to molecular studies involving samples of genetic material. The results of these studies invariably set *Phemeranthus* apart from *Talinum*, and have served to help re-enforce our work with the group [Carolin, 1987; Hershkovitz, 1993].

Interestingly, not only do the two groups prove to be distinct, but they are probably not even very closely related. Molecular evidence in particular helps point to the mostly likely kinships of these two genera [Hershkovitz & Zimmer, 1997; Applequist & Wallace, 2001; etc.].

Phemeranthus is related to genera such as *Calyptridium, Cistanthe, Calandrinia, Lewisia, Montia*, etc.

Talinum is apparently most closely related to *Talinella, Schreiteria*, and probably *Amphipetalum*. It is also close to *Portulaca, Anacampseros, Grahamia*, and *Talinopsis*. As a group these genera are also perhaps more closely akin to the Cactaceae than they are to the rest of the Portulacaceae!

Phemeranthus and *Talinum* are succulent herbaceous perennials (except *Talinum polygaloides*, which is suffrutescent, becoming woody with age) with fleshy tuberous taproots. In common with most Portulacaceae, the flowers have 2 foliaceous or scarious sepals subtending a whorl of usually 5 (4-8) petals. Stamens are from a number equaling the petals to at least 30, depending upon species. The style is slender and topped by usually 3 short spreading to capitate stigmata. Inflorescences in both genera are cymose or derived from cymes. The fruits are unilocular 3 (rarely 2-4)-valvate capsules, bearing seeds on a free-central placenta, dehiscing longitudinally and often circumscissally at the base.

Phemeranthus may be caulescent with closely placed alternate leaves, to acaulescent with leaves in tight caespitose clumps. The terete leaves will separate the genus from all other Portulacaceae except some species of *Portulaca*, which are always caulescent, have wool in the leaf axils, have flowers in tight terminal heads, and the fruit are perigynous circumscissal capsules (not superior and valvate as in *Phemeranthus*). *Lewisia pygmaea* can be confused with *Phemeranthus*, but has acropetally dehiscent fruit, and the leaves are distinctly broader than thick and flattened above. Plants of *L. pygmaea* are found in moist, usually gravelly Subalpine or Alpine habitats, generally well above 9000 ft. *Phemeranthus* species are

(Continued on page 2, Portulacaceae)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(Portulacaceae, Continued from page 1)

not found above Montane elevations, rarely above 8000 ft., and favor more xeric habitats.

Talinum species are caulescent and produce alternate flattened leaves with distinct midribs. In New Mexico, the flat leaves and acropetally dehiscent mostly pendent 3-valved fruits are enough to recognize this genus at a glance. *Talinum* species are absent from northern New Mexico. They occur mostly below 6000 ft.

Naturally occurring hybrids are rare in *Phemeranthus*, but I have found individuals of *P. brevicaule* X *P. confertiflorus* near Ramah in Cibola County. These two rarely grow together, but in this location they can be found within a few feet of one another where limestone and basalt abut. The hybrids are very attractive, combining the best of both parents. These hybrid plants appear to be totally sterile. Hybrids involving other species are also occasionally encountered.

Species of both *Phemeranthus* and *Talinum* are only active during warm weather, usually starting growth after summer rains, but occasionally earlier in late spring. Most species are capable of surviving extended drought, and in some years may not grow at all. Flowers in all species are normally open for an hour or two during only one day, and in all species flowers open at a specific time of day (mostly afternoon.

The brief life of the flower is the basis of the name *Phemeranthus*, and also of some of the vernacular names of species of *Phemeranthus*, such as 'Flower-of-the-hour" and "Fame Flower". There are many common names for *Phemeranthus* species. Some of the most common include 'Rockrose', 'Rockpink', 'Sandpink', etc. The adulteration of 'Fame Flower' to "Flame Flower" is also common in literature. Some of the true Talinum species are now also seen in popular literature as 'Flame Flower', and it actually fits them better, with their often showy (albeit fleeting) yellow to red flowers. Vernacular names for *Talinum* species are few in English. Relatives of *T. paniculatum* are often called 'Baby's-breath' or 'Jewels of Opar'. I have also heard vernacular names used for *Talinum* species in Mexico, but neglected to keep record of them. They all started with the word 'Yerba'. A few additional names are listed below.

Several species of *Phemeranthus* are very attractive. A few are now popular in cultivation, where they are often used as miniature "Alpines" in rockeries.

The species of *Talinum* are mostly not popular in cultivation, though collectors who specialize in succulent or tuberous-rooted plants occasionally grow a few. One cultivar of *T. paniculatum* with yellowish leaves and reddish stems is now becoming popular, and another with variegated leaves is well known. Foliage and/or roots of various species of *Talinum* have also been used medicinally or as food. I have tasted the roots, which can be likened to bitter potatoes. A few species are occasionally grown as leafy green vegetable crops.

Here I hope to help clear up some of the confusion which surrounds these plants in New Mexico. I have written an identification key, and included some notes on the various species. This should allow the identification of plants in the field, and should help to sort out the numerous misidentified specimens found in the various herbaria.

In some cases, the appropriate nomenclatural combinations have not been made in the genus *Phemeranthus*, and the taxa retain the *Talinum* affiliations awaiting the nomenclatural corrections. No nomenclatural innovations nor new taxa are proposed herein.

1 Leaves terete or nearly so, midvein not obvious. Fruit dehiscing basipetally or disintegrating. Seeds with an investing translucent pellicle (developing as a funicular aril) ... ***Phemeranthus***

1 Leaves flat or nearly so, with midvein readily visible. Fruit dehiscing acropetally (beginning at the base and progressing toward the tip), the valves deciduous upon dehiscence, with apices of valves sometimes remaining connected after falling. Seeds without investing pellicle ... ***Talinum***

PHEMERANTHUS Rafinesque

1808, Med. Repos. II. 5: 350; reprinted in March, 1814, Specchio delle Scienze 1: 86..
Type: *Phemeranthus teretifolius* Rafinesque, 1801, Med. Repos. II. 5: 350;

Eutmon Rafinesque [as genus], 1833, Atl. Jour. 1: 177.
Type: *Talinum* (sect. *Phemeranthus*) *napiforme* de Candolle, 1828, Prodr. 3: 357.

Litanum Nieuwland, 1915, Am. Midl. Nat. 4: 90.
Type: *Talinum parviflorum* Nuttall

This is a genus of temperate latitudes or mountains. It occurs away from the coasts, from British Columbia to Pennsylvania , Georgia, Arkansas, Texas and Oaxaca in Mexico. One species occurs in w. Argentina and sw. Bolivia. The preferred habitat of most species is thin layers of growth medium (gravel, sand, soil, etc.) over a rock substrate, usually in broken terrain on ledges, rock slopes, cliffs, hilltops, etc. A few species are more broad in their preferences.

1 Seeds with coneentric ridges
- 2 Stems well developed. Flowers white to pink. Capsules briefly persistent after dehiscing. Calcareous substrates ... ***Phemeranthus longipes***
- 2 Nearly acaulescent, leaves in basal rosettes. Flowers yellow. Capsules deciduous at maturity. Mostly on igneous substrates, primarily rhyolite
  - 3 Leaves mostly under 3 cm long, narrowed at base appearing petiolate (narrowed portion often below soil level). Flowers usually under 8 mm in diameter. Likely in Animas or southern Peloncillo Mountains, but not yet recorded from New Mexico ... ***Talinum (Phemeranthus) parvulum***
  - 3 Leaves mostly over 3 cm long, not appearing petiolate. Flowers usually over 8 mm in diameter ... ***Phemeranthus humilis***

1 Seeds nearly smooth, with rows of low tubercles
- 4 Plants with predominantly vertical aspect. Inflorescence with long slender peduncle, held erect, usually exceeding leaves, usually many-flowered
  - 5 Flowers mostly over 2 cm across, lavender to magenta, fragrant. Stamens more than 15 in number. Sepals persistent in fruit. Likely in northeastern sandhills areas, but not verified from New Mexico ... ***Phemeranthus calycinus***
  - 5 Flowers under 2 cm across, not fragrant. Stamens usually 5 (rarely to 10) in number
    - 6 Flowers white to pale pink, magenta not known to occur. Sepals often with purplish mark, usually acute, persistent in fruit. Fruit elongate, typically acute, basipetally dehiscent, persistent at maturity (but delicate). Seeds usually appearing bluish to grayish due to pellicle ... ***Phemeranthus confertiflorus***
    - 6 Flowers usually magenta, but often white to pink in western populations. Sepals with no purplish mark, usually obtuse, early deciduous. Fruit usually nearly globose and obtuse or

(*Continued on page 3, Portulacaceae*)

(Portulacaceae, Continued from page 2)

rounded; disintegrating upon dehiscence (apparently acropetal?). Seeds usually appearing black ... ***Phemeranthus parviflorus***

4 Plants with predominantly procumbent to horizontal aspect. Inflorescence small, one to few-flowered, appearing axillary, not erect and often not exceeding leaves

7 Leaves acute. Flowers usually magenta (rarely white) petals usually acute apically. Sepals acute, persistent in fruit. Inflorescence indeterminate and usually with 3 to 5 flowers (occasionally one, or more than 5). Fruit persistent at maturity but very delicate ... ***Phemeranthus brevicaulis***

7 Leaves usually obtuse or blunt. Flowers with petals usually obtuse apically. Sepals usually obtuse, early deciduous. Inflorescence single-flowered (rarely 2). Fruit deciduous upon dehiscing

8 Plants rhizomatous. Leaves usually more than 1.7 cm long. Flowers usually more than 2 cm in diameter, magenta ... ***Phemeranthus* sp. 1.** [publ. in prep.]

8 Not rhizomatous.

9 Leaves usually over 1.7 cm long. Flowers usually more than 2 cm in diameter, white to magenta (usually pink to magenta). Calcareous substrates, including calcareous sandstone ... ***Talinum (Phemeranthus) brachypodum***

9 Leaves usually under 1.7 cm long. Flowers usually less than 2 cm in diameter, white to magenta. Red sandstone substrates ... ***Phemeranthus brevifolius***

***Phemeranthus* sp. 1** [publ. in prep.]

This species is very similar to *Talinum* (*Phemeranthus*) *brachypodum,* but there is a tendency toward dorso-ventral flattening of the leaves, the coloration is darker, and this species appears to be the only *Phemeranthus* that produces rhizomes.

It is known from only one small population north of Reserve, New Mexico, where it was found several years ago by Pat Barlow on calcareous soils overlying conglomerate.

Talinum (Phemeranthus) brachypodum S. Watson - **Laguna Fameflower**

1885, Proc. Am. Acad. 20: 355.

T.L.: near Laguna Pueblo, New Mexico, USA

This rare species is very similar to, and closely related to *P. brevifolium,* but is larger in all proportions. The two are allopatric, with different habitat requirements. *T. brachypodum* is also superficially very similar to *P. brevicaulis*, and the two may occasionally found in the same locations. However, it seems that they usually occur in adjacent but separate colonies, and not often actually intermixed.

It is known from north of Ladrone Peak in Socorro and Valencia Counties, and from near Laguna Pueblo in Cibola County.

***Phemeranthus brevicaulis* (S. Watson) Kiger - Showy Fameflower**

2001, Novon 11 (3): 319.

Talinum brevicaule S. Watson, 1886, Proc. Am. Acad. 21: 446.

T.L.: near Santa Eulalia [Mine], Chihuahua, Mexico.

Talinum pulchellum Wooton & Standley, 1913, Contr. U.S. Nat. Herb. 16: 121.

T.L. : Queens, New Mexico, USA

Talinum eximium A. Nelson, 1931, Am. Jour. Bot. 18: 431.

T.L.: Carlsbad Caverns, New Mexico, USA.

Talinum youngii C. H. Mueller, 1933, Torreya 33: 148

T.L.: Chisos Mountains, Texas, USA.

This is one of our most attractive species, and it is becoming popular as a rockery plant. Without flowers, it and related species are often confused with *Sedum*.

P. brevicaulis has been found from Mills Canyon to the Zuni Mountains, and southward to central Chihuahua and Trans-Pecos Texas. It occurs on calcareous substrates, usually over limestone or travertine, but sometimes on calcareous sandstones, conglomerate, gypsum, etc.

Phemeranthus brevifolius (Torrey) Hershkovitz - **Short-leaf Fameflower**

1997, Taxon 46 (May): 222.

Talinum brevifolium Torrey, 1853, Sitgreaves, Rep. Exp. 156.

T.L.: On the Little Colorado [River], Arizona, USA

Claytonia brevifolia (Torrey) Kuntze, 1891, Rev. Gen. Pl. 1: 57.

Material from New Mexico is usually dark for the species, often with purplish leaves, and with magenta flowers. In Utah it is usually a grayer plant with white to pink flowers. However, even though averages differ, the range of variation seems about the same throughout the distribution of the species.

This is a species of the Colorado Plateaus. In New Mexico it is known from a few scattered locations in the Chuska Mountains and from west of Mount Taylor to the state line near Gallup. It should be searched for in other favorable habitats in nw. New Mexico. It is widespread in n. Arizona and s. Utah, but has not yet been recorded from Colorado.

Phemeranthus calycinus (Engelmann) Kiger - **Sandhills Fameflower, Sandpink**

2001, Novon 11 (3): 320.

Talinum calycinum Engelmann, 1848, Wisliz. Tour N. Mex. 88.

T.L.: In sandy soil on the Cimarron [River], probably in Kansas or Oklahoma, USA.

Claytonia calycina Kuntze, 1891, Rev. Gen. Pl. 1: 57.

This Great Plains species is not recorded from New Mexico, but occurs nearby in Colorado, Kansas, Oklahoma, and Texas. It should be looked for in the Cimarron and Canadian drainage areas in prairie grassland on eolian sand deposits, where it favors gravelly areas near the tops of "sandhills".

The type collection ("in sandy soils along the Cimarron") may well have been made by Wislizenus in New Mexico, but this is uncertain, and Kansas seems most likely. I have not taken time to research the type specimen data vs. the journal of Wislizenus yet, and this may well give the locality more precisely.

This species has been widely confused with a common species from the Ozark region. The Ozark plant is common in cultivation masquerading under this name, but it is actually an as yet undescribed spe-

(Continued on page 4, Portulacaceae)

Botany is the natural science that transmits the knowledge of plants.
— Linnaeus

(Portulacaceae, Continued from page 3)
cies. The Ozark plant differs in having the rootstalk less strictly vertically napiforme, more often branching, and shallower in the soil (often partly exposed). A portion of the perennial stem is above ground (fully subterranean in *P. calycinus*). The coloration of the vegetative parts is less glaucous. The inflorescences are better developed, more branched, with more flowers. The flowers are smaller, usually darker in color, and non-fragrant (a chocolaty sweet odor to true *P. calycinus* flowers).

Phemeranthus confertiflorus (Greene) Hershkovitz - **Rocky Mountain Fameflower, Rocky Mountain Rockpink**
1997, Taxon 46 (May): 222.
Talinum confertiflorum Greene, 1881, Bull. Torrey Club 8: 121.
T.L.: Pinos Altos Mountains, New Mexico, USA.
Talinum gracile Rose & Standley [non Colla, 1833], 1911, Contr. U. S. Nat. Herb. 13: 285
T.L.: Cosihuriachi, Chihuahua, Mexico.
Talinum rosei P. Wilson, 1932, N. Am. Fl. 21(4): 287. nom. nov. for *Talinum gracile* Rose & Standley
Talinum gooddingii P. Wilson, 1932, N. Am. Fl. 21(4): 287.
T.L.: San Francisco River, Boyles, Arizona, USA.
Talinum fallax von Poellnitz, 1933, Ber. Deutsch. Bot. Ges. 51: 113
T.L.: Rab's Canyon, Grant County, New Mexico, approx. 6500 ft.

This species is amazingly constant in characters for such a widespread species, but there is some variation in coloration, particularly in the degree of purplish pigment on leaf apices and sepals. Flowers are usually white, but may vary to pink. There is also a trend, in plants from southwestern New Mexico southward, toward the persistence of slender perennial and often branched stems. Plants growing from Arizona to Texas and northward usually loose most of their stems to winter, and rarely develop a branching habit to the degree of the more southern plants. Based upon behavior of cultivated material, this seems to be at least partly environmentally induced.

This is our most common species in New Mexico. It has been consistently misidentified as *P. parviflorus* (see below). In New Mexico this species probably occurs in all counties. It is usually found above desert and below subalpine areas in varied non-calcareous gravelly or rocky habitats, usually in full sun. It probably has the widest distribution in the genus, occurring from sw. North Dakota to central Utah and south to ne. Sonora, central Chihuahua, w. Texas, and probably n. Coahuila.

Phemeranthus humilis (Greene) Kiger - **Pinos Altos Fameflower**
2001, Novon 11 (3): 320.
Talinum humile Greene, 1881, Bot. Gaz. 6: 183.
T.L.: "rocky tableland near the south base of the Pinos Altos Mountains., New Mexico, USA.
≠*Talinum greenmannii* Harshberger, 1897, Bull. Torrey Bot. Club 24: 182-184!!
T.L.: "volcanic gravel, Sierra de Ajusco, Mexico"; "exposed volcanic rocks ... 8500 ft."

P. humile cannot be easily confused with any other species in New Mexico. The acaulescent caespitose cluster of terete succulent leaves, bearing small yellow flowers on laterally directed cymes, is distinctive.

This species was described from the Pinos Altos Mountains in New Mexico by Greene, and then not seen again for many years. It was then found in northeastern Sonora and southeastern Arizona. In 1987 I visited the population in Arizona, and then started looking for it elsewhere. The next year I found it near San Lorenzo, New Mexico, and in three locations in northern Chihuahua; it has since turned up in more localities in Grant County, New Mexico. It is still best considered as a rare plant, but further field searches may refute this. I have found the species only in shallow gravelly clay soils over rhyolite or similar igneous rock.

The name *Talinum greenmannii* has been synonymized with *P. humile*, but this is incorrect. That species is Mexican, occurring no further north as west central Chihuahua. It grows in gravel scree on steep slopes under pine forest at higher elevations. It differs by the leaves often having one or two short lateral lobes, usually on one side only; by the very short, often single-flowered inflorescences; and by having a smooth pellicle which obscures the raised ridges on the seed surface beneath.

Phemeranthus longipes (Wooton & Standley) Kiger - **Tortugas Fameflower, Long-stem Fameflower**
2001, Novon 11 (3): 320.
Talinum longipes Wooton & Standley, 1913, Contr. U.S. Nat. Herb. 16: 120.
T.L.: Tortugas (= A) Mountain, Las Cruces, New Mexico.

P. longipes resembles *P. confertiflorus*; however, the flowers are white to pale pink with contrasting pink to magenta filaments, while those of *P.* confertiflorus have filaments usually white, and always at least as light as the petal color. The fruits of this species are more rounded with a "lumpy" look, and tend to disintegrate soon after splitting, instead of remaining intact. The seeds are distinctly different. Also, *P. longipes* grows on calcareous substrates in usually hotter and drier habitats.

I have, in a few locations found this species and *P. confertiflorum* growing sympatrically (as south of San Ysidro in Sandoval County), but this is rare. It can be confusing if one doesn't pay close attention.

This species occurs in New Mexico from Santa Fe and Sandoval Counties through the central part of the state, across extreme western Texas, into Coahuila and Chihuahua. It's distribution in Mexico needs further investigation, but it is likely extensive in the Chihuahuan region of the northern states. It favors calcareous substrates, preferably limestone, but occasionally even gypsum.

Phemeranthus parviflorus (Nuttall) Kiger - **Prairie Fameflower, Small Fameflower, Prairie Rockpink**
2001, Novon 11 (3): 320.
Talinum parviflorum Nuttall, 1838, T. & G. Fl. N. Am. I: 197.
T.L.: On rocks; Arkansas, USA.
Claytonia nuttalliana Kuntze, 1891, Rev. Gen. Pl. I: 57. nom. nov. for *T. parviflorum* under *Claytonia*, but mistakenly called *T. parvifolium* Nuttall by Kuntze; the nom. nov. meant to avoid homonymy under *Claytonia parvifolia* Moçiño., of which the epithet *Claytonia parviflora* would not actually have been a homonym! However, this would have been a later homonym of *Claytonia parviflora* Douglas, 1832!
Litanum parviflorum Nieuwland, 1915, Am. Midl. Nat. 4: 90.
Talinum appalachianum W. Wolf, 1939, Am. Midl. Nat. 22: 319-320.

This species is included only because of the persistent reports of its occurrence in the state. None of these reports have been verified, and all specimens and populations examined have turned out to be referable to *P. confertiflorus*. There is a very slim chance that the species may turn up in ne. New Mexico, but this is very unlikely. The nearest known populations I have been able to verify are at Granite, Greer County, Oklahoma., and Brady, McCulloch County, Texas. The habitat preference of this species is similar to that of *P. confertiflorus*, but it seems almost restricted to shallow benches and rock ledges on exposed non-calcareous slopes.

It occurs from s. Minnesota and se. N. Dakota southward to central Texas and central Alabama. *(Continued on page 5, Portulacaceae)*

(Portulacaceae, Continued from page 4)

Chromosome counts for this species are diploid [2n = 24], and for *P. confertiflorus* are tetraploid [2n = 48]. Artificially produced hybrids have been consistently sterile (personal experience and pers. com. Stephen Jankalski).

Talinum* (*Phemeranthus*) *parvulum Rose & Standley - **Bottle-leaf Fameflower**
1911, Contr. U.S. Nat. Herb. 13: 283.
T.L.: Otinapa, Durango, Mexico.
Talinum marginatum Greene, 1912, Leaflets 2: 270.
T.L.: near Santa Teresa, Tepic [= Nayarit], Mexico.

This species is an entirely smaller plant than *P. humile*, and can also be reeognized by the stipitate base of the leaves. This stipe may be hidden under the soil surface, so a little poking around the plant base may be necessary to be certain of identity. The leaves may vary with conditions, and from plant to plant, from very slender, to rather fat and bottle-like; regardless, the base is always obviously narrowed.

Talinum (*Phemeranthus*) *parvulus* may enter the state in the southwest corner. The Peloncillo and Animas Mountains would be the most likely places to look. The habitat preference is similar to that of *P. humile*, but it seems more restricted to mountains than is *P. humile*. I have found it from 2000 ft to 6500 ft in Mexico, always in mountains, and always associated with Pine and Oak.

TALINUM Adanson

1763, Fam. Pl. 2: 245.
Type: *Portulaca triangularis* Jacquin, =*Talinum fruticosum* (Linnaeus) Willdenow. The type species may have been officially changed to *Talinum fruticosum*, but this needs verification.
Helianthemoides Medicus, 1798, Phil. Bot. 1: 95.
Type: *Portulaca patens* Linnaeus, 1771, Mant. 242.
Chromanthus Philippi, 1871, Sert. Mendoc. Alt.: 14.
Type: *Talinum polygaloides* Gillies ex Arnott

A mostly tropical and subtropical genus, best represented in semiarid subtropical regions with summer rainfall in North America, South America, and Africa. The genus breaks into four distinct groups, and it is interesting that three of the groups of species are represented in both North and South America, but the group which is best represented in North America is split between our continent and Africa.

1 Peduncle triangular in cross section. Inflorescence terminal, cymose. Pollen pantoporate, with approximately 30 pores. Fruit explosive at maturity ... ***Talinum fruticosum***
1 Peduncle roughly terete in cross section (sometimes with low longitudinal ridges or wings). Pollen pantocolpate, with 15 or fewer colpi. Fruit not explosive
2 Inflorescence terminal, a panicle of cymes. Flowers usually less than 7 mm across. At dehiscence fruit with inner scarious layer of valves separating, and forming a basket with valve apices attached by three filaments to receptacle; outer layer of valves immediately deciduous. Seeds compressed laterally, nearly smooth to tubercled, without concentric ridges
3 Flowers yellow (rarely peach-pink or white). Seeds tubercled ... ***Talinum spathulatum***
3 Flowers purplish-pink to magenta. Seeds nearly smooth ... ***Talinum* sp. 1** [publ. in prep.]
2 Inflorescences axillary; single-flowered or short few-flowered cymes. Flowers usually more than 7 mm across. Fruit with valves dehiscing and falling in entirety, layers differentiated, but not separating. Seeds (in ours) globose with concentric raised ridges
4 Stems slender, usually little over 1 mm think in new growth; rapidly becoming suffrutescent and eventually woody; perennial with dormant buds, but usually killed to ground in freezing winters. Leaves linear, thick, usually revolute. Inflorescence short, usually less than 1 cm long; one-flowered, with peduncle much shorter than pedicel. Sepals scarious, mostly early deciduous. Flowers mostly under 1.5 cm across, yellow ... ***Talinum polygaloides***
4 Stems strictly annual, herbaceous, succulent; usually well over 1 mm thick on new growth; becoming suffrutescent only basally only in *T. aurantiacum*. Leaves relatively thin, revolute only in drought. Flowers mostly well over 1.5 cm wide, usually orange, but color may vary
5 Leaves narrowly linear. Sepals scarious and normally early deciduous. Flowers varied in color, yellow, orange, red, magenta, pink, or combinations of these ... ***Talinum* sp. 2** [publ. in prep.]
5 Leaves broadly linear to broadly elliptic or obovate. Sepals foliaceous, prominently three- to five-ribbed; persistent till fruit matures. Flowers orange to orange-red (very rarely yellow).
6 Stems usually less than 2 dm long, simple or few-branched; often becoming slightly suffrutescent basally. Leaves mostly broadly linear. Inflorescence one-flowered; short, usually less than 1 cm long, with peduncle much shorter than pedicel ... ***Talinum aurantiacum***
6 Stems usually reaching over 2 dm long, normally several lateral branches present, not suffrutescent. Leaves mostly broad, elliptic to obovate. Inflorescence usually three-flowered (1 to 5); mostly well over 1 cm long, with peduncles equaling or longer than pedicels ... ***Talinum whitei***

***Talinum* sp. 1** [publ. in prep.]

The small pink to magenta flowers and nearly smooth seeds are diagnostic in New Mexico.

This species occurs in the Sonoran floristic region, and enters only the southwest corner of New Mexico, where it favors canyon bottoms among trees and shrubs. The full distribution in Mexico is uncertain due to confusion with *T. paniculatum*, but it appears to occur from sw. New Mexico to Baja California and south to near Guadalajara (or further ?). It is nearly but not completely restricted to the Pacific drainage.

The similar *T. paniculatum* in not found here, but occurs as close as central and southern Texas. It has leaves mostly broadly obovate with attenuate apices (mostly spatulate and rounded or truncate in our species). The leaves are abruptly reduced in size and bract-like above the base of the inflorescence in *T. paniculatum*, but gradually reduced in size well into the inflorescence in *T. sonorae*. The seeds of *T. paniculatum* are finely tuberculate; not so in *T. sonorae*. The flower color of the two is the same.

T. paniculatum has a wide distribution in tropical South America, the Antilles, and tropical North America, reaching its northern limit in northeastern Mexico and central Texas, and its southern limit in northeastern Argentina. It seems to be absent from the Pacific slope of both North and South America, but this needs further verification.

(Continued on page 6, Portulacaceae)

(Portulacaceae, Continued from page 5)

***Talinum* sp. 2** [publ. in prep.]

The linear leaves, elongate multi-flowered inflorescence, scarious sepals, and variable flower color are all diagnostic.

This species is found in southern New Mexico from Otero County to Arizona, and north to near Socorro. It is generally found in grassland in deep silty soils of rhyolitic origin, usually in flats or near the base of slopes, but the habitat varies and occasionally it is found on rocky slopes or gravelly hilltops.

The nearest relative of this species is *Talinum lineare* (= *T. tuberosum*), which occurs in Mexico from Durango to Miehoacan, and Hidalgo. Our species is larger and more robust in proportions. Also, in *T. lineare,* I have observed yellow to orange flowers, but not pink or magenta.

Talinum aurantiacum Engelmann - **Orange Flameflower**
1850, Bost. Jour. Nat. Hist. 6: 153.
T.L.: southwestern Texas.
Claytonia aurantiacum (Engelmann) Kuntze, 1891, Rev. Gen. Pl. I: 57.
Phemeranthus aurantiacum (Engelmann) Kiger, 2001, Novon 11 (3): 319.

Look for the short, single-flowered inflorescence, and the ribbed foliaceous sepals.

This is a common species, but rarely collected. It is found all across southern New Mexico south of line roughly through Logan, Villa Nueva, Belen, Magdalena, and Alma. It favors hot shallow rocky slopes and hill tops in grasslands, but turns up in many habitats.

The full distribution is from se. Arizona to Texas and south to southern Coahuila and northern Zacatecas in Mexico.

T. fruticosum (Linnaeus) Willdenow - **Water-leaf, Ceylon Spinach, Surinam Purslane, Pourpier, Lugos Bologi, Cariru, Carumbola**
1800, Sp. Pl. 2: 864.
Portulaca fruticosa Linnaeus, 1759, Syst. Nat. ed. 10: 1045.
T.L.: West Indies
Portulaca triangularis Jacquin, 1760, Enum. Pl. Carib. 22.
Portulaca racemosa Linnaeus, 1762, Sp. Pl. ed. 2: 640.
- The names *Portulaca fruticosa, racemosa,* and *triangularis* are homotypic synonyms.
?*Talinum crassifolium* Willdenow, Sp. Pl. 2: 862.
?*Talinum andrewsii* Sweet, 1826, Hort. Brit. 170.
Calandrinia andrewsii Sweet, 1830, Hort. Brit. ed. 2: 219.
Talinum racemosum (Linnaeus) Rohrbach, 1872, in Mart. Fl. Bras. 14 (2): 297.
Claytonia triangularis Kuntze, 1891, Rev. Gen. Pl. I: 56.

The terminal cymose inflorescence on a triangular scape is diagnostic. The rootstock is thickened, but not greatly enlarged. Stems are ephemeral. The plants often behave as annuals rather than perennials in strongly seasonal climates. They cannot withstand freezing.

Living material I have seen has all been white-flowering; however, herbarium specimens from the Lesser Antilles and northern South America, which appear to represent this species, often have yellow, orange, pink, or magenta flowers, and the flowers are larger than average. This complex needs further study.

The natural distribution of this species is difficult to determine due to the wide spread introductions around the world, but it would appear to have originated from areas around the Gulf of Mexico and the Caribbean (including southern Florida). It is not native to New Mexico, but occurs here occasionally as an introduced garden and greenhouse weed.

Talinum polygaloides Gillies ex Arnott - **Yellow Flameflower, Narrow-leaf Flameflower, Woody Flameflower**
1831, Edinb. Journ. Nat. et Geogr. Sc. III: 345-355.
T.L.: "In the Jarillal, and along the foot of the mountains near Mendoza [estado Mendoza, Argentina]".
Talinum aurantiacum var. *angustissimum* A. Gray, 1852, Pl. Wright. I: 14.
T.L.: "Bottoms of Live Oak Creek and on the San Felipe, Texas" (central Texas, probably Austin area?).
Talinum angustissimum (A. Gray) Wooton & Standley, 1913, Contr. U.S. Natl. Herb. 16 (4): 120.

This very distinctive species has been inexplicably confused with other species, and has even been suggested to be a synonym (as *T. angustissimum*) of *T. aurantiacum*. It is easily distinguished from other species with axillary inflorescences by the combination of very slender suffrutescent to woody stems, narrowly linear usually revolute-margined leaves, smaller always yellow single flowers with a very short peduncle, and the translucent scarious, usually deciduous sepals.

I believe that I am the first to use the name *T. polygaloides* for the North American plants, but I have collected material extensively in North America and in South America, and I can find no significant differences in the plants. In fact I cannot reliably sort volunteer plants in the greenhouse as North American or South American. The South American plants more often have flowers which turn reddish upon wilting, but this character is not reliably diagnostic.

The species seems to occur primarily in the southernmost tier of counties in New Mexico. I have found it as far north as Hobbs, Tularosa, Artesia, Caballo, and Lordsburg. It prefers areas of silty or calcareous soils in hot dry areas, but occurs in a variety of habitats from desert flats and grassland to sparsely wooded rocky slopes.

The full distribution of this species is large, and apparently disjunct. It is common in North America from southern Arizona to central Texas and southward to at least Hidalgo. In South America it is common in the Chaco and Monte regions of Argentina, Bolivia, Paraguay, and perhaps other neighboring countries. It seems to have not been recorded from anywhere in between.

Talinum spathulatum Engelmann ex A. Gray - **Yellow Baby's-breath, Jewel's of Opar, Rama del Sapo, Carne Groda**
1852, Pl. Wright. 1: 14.
T.L.: Mountains of New Mexico east of the Rio Grande.
Talinum chrysanthum Rose & Standley, 1911, Contr. U.S. Nat. Herb. 13: 288.
T.L.: Bolaños, Jalisco, Mexico.

The yellow flowers and tubercled seeds must be seen to distinguish this from *Talinum* sp. 1; however, the two rarely grow together, and probably do not occur sympatrically in New Mexico.

This species is not common in New Mexico, but should be looked for in low elevation canyons and along moist arroyos and streams in the south-central portion of the state. It is similar to the previous species, but the yellow flowers and finely tuberculate seeds are diagnostic. It rarely has flowers varying to light peachy pink, and in South America I have found white-flowering populations.

It has a wide range on the Atlantic slope of inland Mexico, just entering the US in Trans-Pecos Texas and s. New Mexico. It is also common on the Atlantic slope of sub-Amazonian South America. Due to confusion between this and *T. paniculatum* the full distribution in between is not known. It may occur also in northern South America and Central America; however, it may also have a disjunct distribution similar to that of several other plants, including *T. polygaloides*.

(Continued on page 7, Portulacaceae)

(Portulaeaceae, Continued from page 6)

Talinum whitei I.M.Johnston - **Madrean Flameflower**

1940, 'New Phanerogams from Mexico, III', Jour. Arnold Arb. XXI: 257-258.

T.L.: 10 mi. west of El Pose, road to Santa Eulalia, 4600 ft., Chihuahua, Mexico.

This species is very close to *T. aurantiacum*, but becomes larger in all proportions except flower size, and the longer multi-flowered inflorescence is diagnostic. Flowers are almost always orange, but I have found yellow and red. The yellow clones were stunted and found growing on an ashy white substrate (not identified) on a steep slope in Hidalgo County. Cuttings from these, became larger and orange-flowering under cultivation.

This is the most common species in Southern Arizona and northern Mexico, and is not rare in New Mexico. It's eastern limits in the state need investigation. All of my observations and all the herbarium sheets I have examined are from west of the Pecos, except for some specimens from the Texas Hill Country. It favors deep soil in rocky areas, particularly in arroyos and at the bases of slopes, but can be found in a variety of habitats.

Acknowledgments

I would like to thank Steven Jankalski, who has been a great help in my work on the genera *Phemeranthus* and *Talinum,* and, without whose tireless library searches and insights and suggestions, much of this work would have perhaps been impossible to complete.

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What's In A Name?

There seems to be continual confusion about *ex* and *in* as they are used in author citations in complete botanical names. Therefore, perhaps it might be beneficial to go, once more, into the breach... From the International Code of Botanical Nomenclature (1994, Tokyo Code): *Article 46.4.* "A name of a new taxon must be attributed to the author or authors of the publication in which it appears when only the name but not the validating description or diagnosis was ascribed to a different author or different authors. A new combination or a *nomen novum* must be attributed to the author or authors of the publication in which it appears, although it was ascribed to a different author or to different authors, when no separate statement was made that they contributed in some way to that publication. However, in both cases authorship as ascribed, followed by "ex", may be inserted before the name(s) of the publishing author(s). *Ex. 13.* Seemann (1865) published *Gossypium tomentosum* "Nutt. mss.", followed by a validating description not ascribed to Nuttall; the name may be cited as *Gossypium tomentosum* Nutt. ex Seem. or *G. tomentosum* Seem."

[Note: Our last little entry about botanical anagrams (issue 17) prompted Lisa Huckell to call my attention to a web site dealing with this kind of nomenclatural jabberwocky: "Curiosities of Biological Nomenclature" at http://www.best.com/~atta/taxonomy.html#wordplay]

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New Plant Distribution Records

New records for New Mexico should be documented by complete collection information and disposition of a specimen (herbarium). Exotic taxa are indicated by an asterisk (*).

—George W. Cox [Biosphere & Biosurvival, 13 Vuelta Maria, Santa Fe, NM 87506]

Euphorbia mysinites Linnaeus (Euphorbiaceae): Santa Fe Co., adventive along roadsides, Calle Adelina west of Santa Fe, n.d., Cox 01-3 (UNM).

Berberis vulgaris Linnaeus (Berberidaceae): Taos Co., understory of cottonwood woodland on floodplain of Rio Pueblo de Taos in Los Cordovas, n.d., Cox 01-5 (UNM).

—Bob Sivinski [P.O. Box 1948, Santa Fe, NM 87504]

Carex albonigra Mackenzie (Cyperaceae): Santa Fe Co., Santa Fe Baldy in alpine tundra, Sivinski 3915 (UNM); Taos Co., Fletcher 4023 (UNM). [Both specimens identified by Miriam Fritts; this verifies the report by M&H]

—Richard Worthington [P.O. Box 13331, El Paso, TX 79913]

Chaenactis carphoclinia Gray (Asteraceae): Hidalgo Co., Pyramid Mts., 5 rd. mi. by I-10 SW of Lordsburg, 27 Apr 1997, Worthington 26402 (TEX-LL, UNM). [Determined by B. L. Turner; verifies an early report in North American Flora]

Chamaesaracha edwardsiana Averett (Solanaceae): Otero Co., Guadalupe Mts., Worthington 30459 (UTEP), Worthington 30514 (NMC). [Previously known from Texas.]

—Kelly W. Allred [Box 3-I, New Mexico State University, Las Cruces, NM 88003]

Nymphaea mexicana Zuccarini (Nymphaeaceae): Sierra Co., Kingston, small pool at head of spring, 200 m north of Percha Creek and a picnic area on the east side of town, 6400 ft, 30 June 1998, T.P. Adams 279, 288 (NMCR). [Known from Texas & Arizona, and long suspected to be in New Mexico.]

Kelly Allred

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The Fall of Giants

Paul Alan Cox

[Reproduced with permission from Plant Talk, the quarterly magazine on plant conservation. Details at www.plant-talk.org]

Within the last year and a half or so PLANT TALK has chronicled the passing of several giants in plant science and plant conservation. I have regarded as a personal loss the deaths of Richard Evan Schultes, Ledyard Stebbins, and most, recently, Herbert Baker, who all loomed large in my graduate education. Each of these three scientists played key roles in founding disciplines now considered crucial to plane conservation. Schultes was arguably the father of modern ethnobotany, Stebbins was architect of the new evolutionary synthesis, and Herbert Baker and his wife Irene Baker led the 'renaissance' in pollination biology and plant reproductive biology.

After receiving my PhD I was fortunate to spend two years as a Miller Fello w assigned to Herbert and Irene Baker's laboratory at the University of California, Berkeley. Irene's command of laboratory technique was as authoritative as Herbert's encyclopaedic grasp of the literature. In the Baker lab, there was little mechanization — we used wet lab techniques rather than expensive machinery for studies ranging from nectar chemistry to electrophoresis — and I and the graduate students there learned that science is an endeavour facilitated not by expensive equipment, but instead by inquiring minds. Irene led the laboratory work, and Herbert took the lead in writing the papers. He suffered from Parkinson's disease, but refused to be handicapped by it, and walked several miles a day to his office for exercise. Despite physical difficulties, Herbert remained intellectually playful. Our shared lunches became somcthing of a ritual: as he nibbled his cheese sandwich (always quietly pushing half of his chocolate bar to my side of the lab bench), I would ask him about the reproductive biology of some obscure plant species I had pulled out of Mabberley or Kerner or Marilaun. Herbert would then present a lucid account of the plant's seed dispersal, pollination biology, colonization strategies, conservation status, and economic potential, based on his reading the domestic and foreign literature as well as his own observations. I cannot recall ever stumping him.

Ledyard Stebbins and Richard Schultes displayed a similar breadth of knowledge, and each had a sound understanding of the natural history of plants. As a graduate student, I attended Professor Schultes' noon-time seminars where I was instructed in the finer arts of using a blow gun, the proper way to approach a native tribe for the first time, and the importance of understanding indigenous religions and rituals. Later at Berkeley, I came to know Ledyard Stebbins, who was a frequent visitor to the Baker lab, and spent some time with him in Davis. Up until the very end, Ledyard was pursuing field work on the breeding systems of *Antennaria,* the subject of his Harvard dissertation three quarters of a century before.

I relate these stories not to claim some modicum of reflected glory through association with these famous scientists, but merely to say that as a fly on the wall — a very fortunate fly on the wall — I was able to see for myself the depth of thought and preparation that characterized Baker, Schultes and Stebbins. Where are their equals among the younger generation of botanists?

There is only a handful of botanists who have the broad field experience of the previous generation, and fewer still, such as Spencer Barrett or Jim White, who have anything approach-

(Continued on page 2, Giants)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(Giants, Continued from page 1)

ing the comprehensive grasp of the literature commanded by these three giants. Furthermore, I am deeply concerned that current training programmes in what is now called 'integrative biology', or 'ecology, evolution, population, and ecosystem sciences', are unlikely to produce botanists with such a deep understanding of the life of plants.

To conserve plant species, we need to understand them. While fluency in plant molecular techniques and agility in manoeuvring within an increasingly bureaucratized conservation landscape seem to be requirements for younger plant biologists, a broad appreciation of natural history no longer seems to be necessary.

Plant conservation today suffers from a lack of practitioners — the 'foot-soldiers' of botany, who can identify plants accurately and assess sites for plant richness. Sweden still has many biologists imbued with a love of natural history but in some countries, notably Britain, France and my own United States, field botany has moved from the academic to the amateur sphere. Botany departments in universities have been disbanded, replaced by academic units focused primarily on molecular approaches. And old-fashioned searches through library stacks and the wondrous serendipity of coming upon key papers, often written in German, French or Italian decades ago, has been replaced by computerized search engines, which reveal only recent, English work on plants, many of an ephemeral nature.

Today politicians have accepted the case that plant species are declining and need urgent conservation efforts. However, there still seems to be too little support for the training of field botanists in subjects like practical taxonomy, plant identification, plant ecology and ethnobotany, fields vital if we are to succeed in biodiversity conservation. In addition, support for basic botanical infrastructure, including herbaria, botanical libraries and gardens, seems harder to find in an increasingly competitive philanthropic environment.

Three giants have fallen. Who remains to replace them? 🕮

Plant Distribution Reports

New records and significant distribution reports for New Mexico plants should be documented by complete collection information and disposition of a specimen (herbarium). Exotic taxa are indicated by an asterisk (*).

— G.L. Nesom [see Nesom 2001, Botanical Literature of Interest]
Pseudognaphalium jaliscense (Greenman) A. Anderberg (Asteraceae): Grant, Lincoln, Mora, and San Miguel counties.
Pseudognaphalium luteoalbum (Linnaeus) Hilliard & Burtt (Asteraceae): Hidalgo Co.

— William J. Hess [The Morton Arboretum, Lisle, IL 60532]
Adolphia infesta (Kunth) Meissn. (Rhamnaceae): Hidalgo Co., Guadalupe Canyon, 28 mi. E of Douglas, AZ, on W side of Peloncillo Mts., desert thornland near creek bottom, 4500 ft, 2 April 1969, W.J. Hess 2432 (MOR).

— D. Wilken [see Wilken 2001, Bot. Lit. of Interest]
Ipomopsis longiflora (Torrey) V.E. Grant subsp. ***neomexicana*** Wilken (Polemoniaceae): type from Sierra Co., 18 other counties cited.

— Kelly Allred [MSC Box 3-I, New Mexico State University, Las Cruces, NM 88003] and David Lee Anderson [Environmental Services Division (DES-E), Bld T-150, White Sands Missile Range, NM 88002]
****Conyza bonariensis*** (Linnaeus) Cronquist (Asteraceae): Doña Ana Co.: Las Cruces, adventive in lawn at corner of Solano & Wyoming streets and growing with *Conyza ramosissima*, 24 Oct 2001, K.W. Allred 8193 (NMCR); White Sands Missile Range, flower beds on main post, 28 June 1999, David Lee Anderson 7520 (WSMR). [This validates an earlier report for which the specimen cannot be found.]

— Kelly Allred [MSC Box 3-I, New Mexico State University, Las Cruces, NM 88003]
****Myriophyllum aquaticum*** (Vellozo) Verdcourt (Haloragaceae, including *M. brasiliense*): Socorro Co., Bosque del Apache National Wildlife Refuge, forming thick mats in the irrigation canals, 4500 ft, 30 Mar 2001, K.W. Allred 8211 (NMCR). [This is the second record and a second county for this exotic escape from aquaria.]

— Susannah Johnson [1705 Brown Road, Las Cruces, NM 88005]
Muhlenbergia eludens C.G. Reeder (Poaceae): Catron Co., Apache National Forest, Saddle Mountain, along road to Saddle Mt. Lookout about 1.5 miles below the summit and 0.5 miles above Hinkle Park, in a saddle between two small hills, ponderosa pine forest with juniper, piñon, and oak, 7800 ft, 29 Sep 2001, S.B. Johnson 747 (NMCR). [This is the second record of this little grass in New Mexico, the first being in 1925 from a site 39 miles to the east.] 🕮

Botanical Literature of Interest

Taxonomy and Floristics

Ashworth, V.E.T.M., B.C. O'Brien, & E.A. Friar. 2001. **Survey of *Juniperus communis* L. (Cupressaceae) varieties from the western United States using RAPD fingerprints.** Madroño 48(3):172-176. [Calls into question the recognition of varieties in this species.]

Brodo, I.M., S.D. Sharnoff, & S. Sharnoff. 2001. **Lichens of North America.** Yale University Press, New Haven, CT. 795 pp. [This is an extraordinary book, and at $48.96 (amazon.com, 12 Feb 2002) it's a modern-day miracle!]

Costea, M., A. Sanders, & G. Waines. 2001. **Preliminary results toward a revision of the *Amarantlus hybridus* species complex (Amaranthaceae).** Sida 19(4):931-974.

Costea, M., A. Sanders, & G. Waines. 2001. **Notes on some little known *Amarantlus* taxa (Amaranthaceae) in the United States.** Sida 19(4):975-992.

Duvall, M.R., J.D. Noll, & A.H. Minn. 2001. **Phylogenetics of Paniceae (Poaceae).** Amer. J. Bot. 88(11):1988-1992.

Forbes, A.C. & K.W. Allred. 2001. **An inventory of the flora of the New Mexico State University Range and Livestock Research center (Corona Ranch).** New Mexico Naturalist's Notes 3(1):1-32.

Harms, R.T. 2001. **Radiate and eradiate individuals in *Grindelia nuda* (Asteraceae).** Sida 19(3):715-717.

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What's In A Name?

We're all familiar with "How do I love thee? Let me count the ways." (Elizabeth Barrett Browning, Sonnett 43). Well, the same holds true for colors and botanical names. Take red, for example. The epithet *ruber* (masculine; *rubra,* feminine, and *rubrum*, neuter) is the common term for any general red. Hence *Festuca rubra* and *Chenopodium rubrum* (we have no masculine *rubers* in the New Mexico flora). In addition, we have *purpureus* for a dull red, with a tinge of blue (purple), which is registered by *Aristida purpurea* and *Cymopterus purpureus; coccineus* for scarlet, as in *Echinocereus coccineus* and *Stachys coccinea*; *roseus* for a pale red, as in *Pinaropappus roseus* and *Palafoxia rosea*; *sanguineus* and haemat- for blood red, as in *Polygala sanguinea* and *Berberis haematocarpa*; *vinaceus* for wine-red, as in *Cirsium vinaceum*; flesh-colored reds appear in *Tripterocalyx carnea*, *Hieraceum carneum*, and *Allionia incarnata*; *flammulus* for flame-colored, as in *Ranunculus flammulus*; and *miniatus* for vermilion, scarlet with a touch of yellow (and not meaning miniature), as in *Castilleja miniata*. In all, there are at least 25 Latin adjectives (perhaps more) that have been used in botanical literature to refer to some sort of red. So, a red is a red is a red? Perhaps not, but by any other name still looks the same.

— K. Ruber-totus.

Botany is the natural science that transmits the knowledge of plants.

— Linnaeus

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A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University.

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CLEOME MULTICAULIS ON THE RÍO GRANDE IN SOUTHERN NEW MEXICO?

Richard Spellenberg

Department of Biology, New Mexico State University, Las Cruces, NM 88003

[This is a copy of an 9 April 2002 e-mail communication with Dr. Charlie McDonald, regional botanist with the US Forest Service, and chair of the New Mexico Rare Plant Technical Council. At a recent meeting Charlie had asked me to document quotes regarding the presence of *Cleome multicaulis* (Capparaceae) from the Río Grande in New Mexico. My ramblings in attempting to verify the negative may be of general interest to New Mexico botanists, and led me to reverse my original view.]

Here are some thoughts and quotes on the Wright "below Donana" *Cleome multicaulis* collection from 1851. At first I thought that C. Wright did collect *C. multicaulis* along the Río Grande – potentially there was suitable habitat. I think now, however, that this is one of those situations where a printed label from a specimen in one herbarium (US?) got in the literature, without careful assessment, and has been "validated" through recurrent use. There may have also been a record-keeping error prior to Iltis' review of the Capparaceae for New Mexico, for there is some question that there are specimens at US (as cited). I would feel safe to modify the write-up and map on the web site (http://nmrareplants.unm.edu/) to indicate a firm record from approximately Faywood, and to put in the comments section of the write-up that references to the Wright record along the Río Grande "below Donana" most likely result from a mix-up in interpretation of early, incomplete, printed labels. The evolution of my position is outlined below.

From Fort Davis, Wright hit the Río Grande at about Indian Hotsprings, ca. 80 miles below El Paso. Thus, the locality cannot be Donna, near McAllen, on the lower Rio Grande. Wright didn't get close to this village. A few people, for other taxa, have made that error. Wright spelled fonetically, and didn't spell presisely, and Doñana is the proper pronunciation for Doña Ana. So we can remove that remote possibility.

Here are some of quotes regarding the probability of *Cleome multicaulis* coming from New Mexico, along the Río Grande. By the time the passages quoted were written a tremendous amount of history had passed.

Iltis, H. H. 1958. Studies in the Capparidaceae—V. Capparidaceae of New Mexico. Southwestern Naturalist 133-144. Page 142, "Two collections are said to have come from New Mexico. Both were collected on the Mexican Boundary Survey of 1851, with Pary [sic], Bigelow, Wright, and Schott listed as collectors: 'Near the Mibres [sic], N. Mex., *Bigelow'* (evidently the Mimbres Mts., Grant Co.) (NY, US); 'Valley of the Rio Grande below Donana' (US). Whether the second collection actually came from the stated locality is doubtful, for it has not been found since in that well-collected area, and Standley states (Contrib. U. S. Nat. Herb. 13: 146, 1910) that few of the specimens so labeled actually came from there."

Spellenberg's comment: One must keep in mind the human impact that happened between 1851 and 1910, when Standley and Wooton were working over the flora. The Valley between El Paso and Doña Ana was intensively under agriculture. No collectors had been through the area, to speak of, from 1851 to 1890, when Wooton arrived. Wooton was focusing on new taxa, and new records, and collected mostly in the Organs and in the Sacramento and White mountains on a regular basis, with a

(Continued on page 2, Cleome)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(Cleome, Continued from page 1)

few far-flung trips throughout the state. There are relatively few Wooton collections from the Rio Grande Valley. Standley added a few collections, but even if present, it would be easy to miss *Cleome multicaulis* if habitat were reduced, or by that time all habitat may have been obliterated.

Also, please note from the next quotes that Standley says nothing about "this well-collected area." It is something that Iltis inserted.

Standley, P. C. 1910. The type localities of plants first described from New Mexico. Contr. U.S. Nat. Herb. 13:143-246 (plus map). Page 146. "Routes of Charles Wright. 1851-1852....The plants obtained on the 1851 trip were mostly collected in New Mexico (about Santa Rita), though all the time from September 2 to October 4 was spent on a trip through southeastern Arizona and northeastern Sonora....A new difficulty arises here, since the specimens of the 1851 and 1852 collections were sent out under the same printed label and it is not possible to tell which specimens were collected each year...The following notes regarding Wright's route in New Mexico were taken from Wright's field notebooks by Professor Wooton: 1851. July 4—5. Rio Grande bottom above Frontera [approximately present day Sunland Park area of El Paso on the east side of the river] and at the cottonwoods. 9, 18, and 19. Valley of the Rio Grande below Dona Ana and at Dona Ana. 29. From Dona Ana to San Diego, the crossing of the river..." [from there the party headed to Santa Rita].

Shaw, E. A. 1987. Charles Wright on the Boundary 1849-1852, or Plantae Wrightianae revisited. Meckler Publishing Corp., Westport. Page 23. "Field numbers 28 – 149: 26 July – 2 August. Graham, with Wright, left Frontera on 26 July to meet Bartlett and the main body of the Commission at the Coppermines, Santa Rita del Cobre. The party headed up the valley of the Rio Grande. The locality mentioned on the first day as "the Cottonwoods" refers to a camping place among the cottonwoods in the river valley; it is station 36 in Graham's listing of places where barometric observations were made and he said that it was eighteen miles above Frontera. Johnston (mss.) placed it near Berino, New Mexico.

"On 28 July they arrived at Dona Ana, then a place of some importance and a U. S. military post; Johnston (mss.) suggests that they camped that evening at the San Diego crossing of the river, where Wright the next morning collected a *Galactia*. This is about ten miles upriver from Fort Selden, below San Diego Mountain. Although shown on Disturnell's map as a town, it was merely a fording place."

Spellenberg's comment: Though Wright collected a number of plants along this stretch, from habitat seemingly suitable, Shaw makes no listing of a *Cleome* or a *Peritoma* collected by Wright from here (or nearby in the list). As transcribed in the list, Wright was good about noting that he was below El Paso, at Frontera, below Doña Ana, at San Diego, and the like. Unfortunately, no literature gives Gray's distribution number for Wright's collection of *Cleome multicaulis*, or Wright's collection number.

Jennings, W. F. 1998. Herbarium survey of specimens of *Cleome multicaulis*. Draft mss., University of Colorado Herbarium. Page 8. "New Mexico. Grant or Luna County. Mexican Boundary Survey, collected under the direction of Major W. H. Emory, commissioner, chiefly in the Valley of the Rio Grande below Dona Ana, by Parry, Bigelow, Wright, Schott [printed]; near the Mimbres, N. Mex., Bigelow [handwritten] (NY) [in fruit; mounted on the same sheet as the Saguache, Colorado, collection by Wolf; annotated by Iltis, 1951, and by Vanderpool, 1988. Iltis (1958) says there are duplicates of this specimen at US, but no such specimens were received in loan. According to Iltis, one of the specimens at US has only "Valley of the Rio Grande below Dona Ana" on the label, while the other has "Near the Mimbres." The NY specimen has both locations on the label, which is partially printed, partially handwritten, as transcribed above. In my opinion, there is only one collection site, and that is probably along the Mimbres River (not the Mimbres Mountains as postulated by Iltis). The printed portion of the label should be used only as an identification of the expedition, and not used literally as the site of collection.]

"[The Mimbres River rises in the Gila National Forest, Grant County, flows southward, and disappears into the sands in the general area of Deming, Luna County. The site of collection is probably at the crossing of the El Paso and Fort Yuma Wagon Road, about on the Grant/Luna County Line, in the general area of Faywood Hot Springs and City of Rocks State Park. Reference to the documents of the expedition makes it clear they followed the wagon road frequently....It is possible that the site of collection is farther downstream, toward what is now Deming, but there is nothing in the record to indicate collecting in that direction. No playa is shown near Deming on the New Mexico state geologic map (T24S, R7W), however, once out of the mountainous area and onto the desert, the gradient was surely so sluggish that the river was more like an extended marsh. Deming is an agricultural area and water diversions or conversion of wetlands (or moistlands) for agricultural purposes may have eliminated the population. On the other hand, I doubt that anyone has bothered to botanize the roadside ditches or wet areas in the vicinity.]"

Ken Heil and Joey Herring write for the review on the NMRPTC website that *Cleome multicaulis* in New Mexico comes from "the mouth of the Mimbres River." In requesting a source of this quote from Ken (e-mail, 8 Apr 2002) he responds, "A few years ago I was working on a T-E book for the BLM-Las Cruces District. While at the BLM office in Las Cruces I xeroxed a lot of information dealing with the rare plants of that area, and of course some of it dealt with *C. multicaulis*. I must have found it in that information; however, all of that material went to Ecosphere Environmental Services, because they took over the project. It would probably be easier for you to check with the BLM in Las Cruces!"

Spellenberg's comment: I suspect that Heil's quote comes from some interpretation of Jennings' work or other literature by a third or fourth party. After reading Jennings' contribution, I checked with Tom Zanoni at the New York Botanical Garden regarding the specimen discussed by Jennings. Here is what he writes:

(*Continued on page 3, Cleome*)

(Cleome, Continued from page 2)

"1. In the general collection, I found the following NM specimen. *Cleome multicaulis* Sesse & Mocino ex DC. [Annotations:] *Cleome multicaulis* det. Staria S. Vanderpool, 1988; *Cleome multicaulis* (=*C. sonorae* A. Gray) det. Hugh H. Iltis, 1951. Two specimens are on this sheet from the Torrey Herbarium [indicated by a rubber stamp in blue ink]. The specimen on the left has this printed header: Mexican Boundary Survey, collected under the direction of Major W. H. Emory, Commissioner, chiefly in the Valley on the Rio Grande, below Doñana---by C. C. Parry, M. D., J. M. Bigelow, M. D., Mr. Charles Wright, and Mr. A. Schott [added in black ink, writing appropriate for the Mexican Boundary Survey labels]: *Cleome sonorae* Gray, Near the Mimbres, N. Mex. Bigelow. ------ The label on the right is on a printed label of the Explorations and Surveys of the 100th Meridian, J. Wolf s.n. from Saguache, Colorado, 1873.

"2. From the Type Collection at NY: A specimen originally in the Torrey Herbarium [indicated by a rubber stamp in blue ink] *Cleome sonorae* A. Gray det. William F. Jennings, 1998; *Cleome multicaulis* DC (=*Cleome sonorae* A. Gray) det. Hugh H. Iltis, 1951. 'Isotype of *Cleome sonorae* A. Gray. Gray in Pl. Wrightianae 2:16. Presumably this is Wright No. 1851, Chiricahui Mts., Sonora, New Mexico. Species syn. with *Cleome multicaulis* DC.'---annotation by H. H. Iltis, 1951. The specimen label itself: No. [blank here] C. Wright, coll. N. Mex. 1851. *Cleome sonorae* n.sp."

So, Wright did collect the species, but with certainty only in or near the Chiricahua Mountains. It is well known that Gray, upon identifying and distributing Wright's collections, assembled specimens from one or more collections of a single taxon and distributed them under a single distribution number which was not the collector's field number. For Wright's 1849 collections he cross-referenced fairly consistently (Shaw 1987, p. 4), either placing Wright's penciled field ticket in a packet with the specimen, or including Wright's field number on the label. This practice rarely continued into 1850 and 1851. General labels were printed, and specifics with regards to locality, date, and sometimes habitat were added by hand, but not consistently. There were also some problems of giving due credit in a timely fashion to collectors other than Wright on the Boundary Commission expedition, Bigelow included (Shaw 1987, p. 14). Also, in the 1850's Torrey and Gray, at Harvard, were inundated with specimens coming in from various government-sponsored surveys of the newly opening West and were having a difficult time keeping up with the influx. Errors might easily occur, particularly errors of omission. In a nutshell, the citation of *Cleome multicaulis* from the "Río Grande below Donana" is most likely incorrect, and the species is known in New Mexico only from the Mimbres River collection of Bigelow in 1851.

A Field Key to the Gymnosperms of New Mexico

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Gymnosperms (from the Greek *gymnós*, meaning naked or exposed, referring to the non-vesseled seeds) comprise one of five great divisions (phyla for the zoologists) of vascular plants in New Mexico. All (of ours) are woody trees and shrubs producing seeds, differing from the flowering plants (angiosperms) in the absence of flowers, the pollen and seeds being produced within cones, rather than in an ovary.

There are currently three families, seven genera, 27 species, and 29 total specific taxa (species+subspecies+varieties) of gymnosperms known in the state (Allred 2002: A Working Index to New Mexico Vascular Plant Names, <http://web.nmsu.edu/~kallred/herbweb/gymno.htm>, q.v. for synonymy.).

The following key is meant to aid in the identification of these conspicuous and often dominant plants. A pocket-sized card is included for field use. I acknowledge fully the precedent works of Wooton & Standley (1915), Martin & Hutchins (1980), and Carter (1997).

1 Shrubs with green photosynthetic stems; leaves reduced to small brownish papery scales and separated by very long (2-10 cm) internodes (*Ephedra*) ... **EPHEDRACEAE**

1 Large shrubs or trees without green photosynthetic stems; leaves needle-like, or if scale-like then green and membranous and overlapping on very short (less than 0.5 cm) internodes

2 Cones woody when mature; foliage leaves needle-like, borne singly or in fascicles, falling from the twigs in age ... **PINACEAE**

2 Cones berry-like when mature; foliage leaves scale-like or needle-like (one species), borne singly, remaining on the twigs and usually the entire twig falling from the plant in age ... **CUPRESSACEAE**

CUPRESSACEAE CYPRESS FAMILY

1 Seed cones becoming woody at maturity, the scales opening and releasing the seeds; plants monoecious ... ***Cupressus***

1 Seed cones usually fleshy and somewhat berry-like, occasionally dry and mealy but not at all woody, the scales not opening and the seeds not released; plants monoecious or dioecious ... ***Juniperus***

Cupressus ... ARIZONA CYPRESS, ***C. arizonica*** Greene

Juniperus

1 Mature leaves needle-like, 6-12 mm long, spreading; cones axillary ... DWARF JUNIPER, ***J. communis*** Linnaeus var. ***depressa*** Pursh

1 Mature leaves scale-like, triangular, less than 5 mm long, appressed; cones terminal

2 Margins of leaves entire (at least 10x); bark exfoliating in rectangular plates; branchlets often drooping or somewhat weeping ... ROCKY MOUNTAIN JUNIPER, ***J. scopulorum*** Sargent

2 Margins of leaves denticulate (at least 10x); bark exfoliating in rectangular plates or in thin strips; branchlets usually not drooping

3 Seed cones with 3-6 seeds; bark exfoliating in rectangular plates ... ALLIGATOR JUNIPER, ***J. deppeana*** Steudel

3 Seed cones with 1-3 seeds; bark exfoliating in thin strips

4 Glands on leaves inconspicuous because they are embedded in the leaf; seed cones somewhat dry and mealy at maturity; plants monoecious ... UTAH JUNIPER, ***J. osteosperma*** (Torrey) Little

4 Glands on leaves conspicuous; seed cones usually somewhat fleshy at maturity; plants dioecious

(Continued on page 4, Gymnosperms)

(Gymnosperms, Continued from page 3)

5 Seed cones reddish blue to brownish, with a glaucous coating; fewer than 1/5 of whip-leaf glands with evident white exudate ... ONE-SEED JUNIPER, ***J. monosperma*** (Engelmann) Sargent

5 Seed cones rose to pinkish or copper to copper-red, glaucous or not; 1/4 or more of whip-leaf glands with evident white exudate

6 Seed cones rose to pinkish, with a glaucous coating; inner surface of leaves glaucous ... ROSEBERRY JUNIPER, ***J. coahuilensis*** (Martinez) Gaussen ex R.P. Adams var. ***arizonica*** R.P. Adams

6 Seed cones copper to copper-red, without a glaucous coating; inner surface of leaves not glaucous ... PINCHOT'S JUNIPER, REDBERRY JUNIPER, ***J. pinchotii*** Sudworth

EPHEDRACEAE JOINT-FIR FAMILY

Ephedra

1 Leaves whorled, 3 at a node; cones sessile

2 Leaves 5-15 mm long; twigs ending in sharp points ... LONGLEAF EPHEDRA, ***E. trifurca*** Torrey ex S. Watson

2 Leaves 2-5 mm long; twigs blunt-tipped ... TORREY'S EPHEDRA, ***E. torreyana*** Torrey ex S. Watson var. ***torreyana***

1 Leaves opposite, 2 at a node; cones sessile or pedunculate

3 Twigs viscid; seeds 2 per cone ... CUTLER'S EPHEDRA, ***E. cutleri*** Peebles

3 Twigs not viscid; seeds 1 or 2 per cone

4 Seeds 1 per cone; leaf bases becoming gray with age and shredding, not forming a collar ... ROUGH EPHEDRA, ***E. aspera*** Engelmann ex S. Watson

4 Seeds 2 per cone; leaf bases forming a black collar

5 Seed cones obovoid, sessile or on peduncles to 8 mm long; bark gray; northwest ... GREEN EPHEDRA, ***E. viridis*** Coville

5 Seed cones globose, on peduncles 10-12 mm long; bark reddish to brown; southeast ... CORY'S EPHEDRA, ***E. coryi*** E.L. Reed

PINACEAE PINE FAMILY

1 Leaves in clusters of 2-5, surrounded by a basal sheath (which may be early deciduous) ... ***Pinus***

1 Leaves borne singly, not in clusters

2 Leaves more-or-less square in cross-section; twigs roughed by peg-like projections that persist after the leaves fall ... ***Picea***

2 Leaves flattened, not squarrish; twigs lacking peg-like projections

3 Leaves sessile, leaving a circular leaf-scar; seed cones erect, the scales falling from the persistent main axis, the subtending bracts not 3-toothed ... ***Abies***

3 Leaves petiolate from a short stalk that lies flat against the twig, leaving an elliptic leaf-scar; seed cones drooping, the entire cone falling when mature, the subtending bracts conspicuously 3-toothed ... ***Pseudotsuga***

Abies

1 Branchlets pubescent; leaves mostly 2-3 cm long, the tips notched to rounded ... CORK-BARK FIR, ***A. arizonica*** Merriam

1 Branchlets glabrous; leaves mostly 3-5 cm or more long, the tips rounded to pointed ... WHITE FIR, ***A. concolor*** (Gordon & Glendinning) Lindley ex Hildebrand

Picea

1 Twigs or leaf bases of current year's growth pubescent; leaves flexible, not sharply pointed; female cones 3-6 cm long ... ENGELMANN'S SPRUCE, ***P. engelmannii*** Parry ex Engelmann var. ***engelmannii***

1 Twigs and leaf bases of current year's growth glabrous; leaves rigid, sharply pointed; female cones 6-10 cm long ... COLORADO BLUE SPRUCE, ***P. pungens*** Engelmann

Pinus

1 Leaves mostly 2-3 in a cluster

2 Leaves mostly 2 per cluster ... PIÑON PINE, ***P. edulis*** Engelmann

2 Leaves mostly 3 per cluster

3 Leaf sheaths early deciduous

4 Leaves mostly 6-12 cm long; plants monoecious ... CHIHUAHUA PINE, ***P. leiophylla*** Schiede & Deppe var. ***chihuahuana*** (Engelmann) Shaw

4 Leaves mostly 3-6 cm long; plants nearly dioecious ... MEXICAN PIÑON PINE, ***P. cembroides*** Zuccarini

5 Leaves bicolored, one surface with white lines, the other surface green ... var. ***bicolor*** Little

5 Leaves of one color on both surfaces, or very nearly so ... var. ***cembroides***

3 Leaf sheath persistent

6 Leaves mostly 25-40 cm long; sheath 2-3 cm long ... APACHE PINE, ***P. engelmannii*** Carrier

6 Leaves mostly 10-22 cm long; sheaths 1-2 cm long ... PONDEROSA PINE, ***P. ponderosa*** Lawson var. ***scopulorum*** Engelmann

1 Leaves mostly 5 (occasionally 4) in a cluster

7 Leaves mostly 10-22 cm long ... ARIZONA PINE, ***P. ponderosa*** Lawson var. ***arizonica*** (Engelmann) Shaw

7 Leaves mostly 3-8 cm long

8 Leaf sheaths persistent; bark of young branches nearly white; needles strongly curved, sticky from tiny resin droplets ... BRISTLECONE PINE, ***P. aristata*** Engelmann

8 Leaf sheaths early deciduous; bark of young branches gray; needles straight or nearly so, lacking resin droplets

9 Needles 3.5-6.5 cm long, yellowish green; cone scales truncate at the apex, neither narrowed nor reflexed; northern New Mexico ... LIMBER PINE, ***P. flexilis*** James

9 Needles 6-8 cm long, bluish green; cone scales narrowed and strongly reflexed at the apex; central to southern New Mexico ... SOUTHWESTERN WHITE PINE, ***P. strobiformis*** Engelmann

Pseudotsuga ... DOUGLAS FIR, ***P. menziesii*** (Mirbel) Franco var. ***glauca*** (Beissner) Franco

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Looking Back in the Month of May —

May 1, 1753: Conventional publication date of *Species Plantarum* by Linnaeus.

May 14, 1804: Lewis & Clark expedition leaves St. Louis.

May 23, 1707: Carl Linnaeus born.

Rye, Wheat, Triticale, and Barley

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I have noticed a confusion among many botanists in distinguishing among the agronomic crops rye (*Secale*), wheat (*Triticum*), their hybrid, triticale (x*Triticosecale*), and barley (*Hordeum*). Ignoring the guffaw we hear from the John Deere at the end of thc lane, I present here a tutorial to the identification of these easily confused grain crops so essential to our well-being, and so little known to our urban citizenry.

One finds these waifs of agriculture not only as short-lived escapes from their crop fields, but also as soil stabilizers sown along roadsides, medians, and concrete clover-leafs.

All of these speeies are charaeterized by a prominent spike inflorescence, usually with long awns (although there are awnless forms that one encounters from time to time), and rather conspicuous auricles at the summit of the sheath.

1 Glumes broad, ovate to broadly elliptic
  2 Nerves of the lemma converging at the apex; plants commonly glaucous ..... ×*Triticosecale*, triticale
  2 Nerves of the lemma more-or-less parallel, not converging at the apex; plants commonly green and not glaucous ..... *Triticum*, wheat
1 Glumes narrow, subulate to narrowly lanceolate
  3 Spikelets three per node of the spike (6 glumes attached to the rachis); lemma keels smooth ..... *Hordeum*, barley
  3 Spikelets single per node of the spike (2 glumes attached to the rachis); lemma keels strongly pectinate-fringed ..... *Secale*, rye

Hordeum vulgare Linnaeus, BARLEY
Hordeum trifurcatum (Schlectental) Wender
Hordeum vulgare Linnaeus var. *trifurcatum* (Schlectental) Alef.
Hordeum distichum Linnaeus

Plants summer or winter annuals, to 100(150) cm tall. Spikes 5-10 cm long (excluding the awns), 0.8-2 cm wide, with 3 spikelets per node, 1, 2, or 3 of which form seed at maturity (resulting in 2-, 4-, and 6-rowed barley), the rachis usually not disarticulating at maturity. Central spikelets sessile. Glumes 10-30 mm long, flattened. Lemmas 6-12 mm long, glabrous or scabrid, with awns 30-180 mm long. Lateral spikelets usually sessile when fertile, pedicelled when sterile, the pedicels to 3 mm, the lemmas awned when fertile.

This species differs from others in the genus *Hordeum* in that the spike remains intact, the disarticulation occurring above the glumes.

Three phases or races are met with in New Mexico: beardless, six-row and two-row barleys. Of the three, the *vulgare* phase, typical of the species, is most easily confused with the other grains mentioned here and is the one most commonly encountered.

1 Awns suppressed or variously deformed, commonly 3-cleft ..... the *trifurcatum* phase, BEARDLESS BARLEY
1 Awns well developed, not deformed nor 3-cleft
  2 Lateral spikelets sessile, fertile and well-developed ..... the *vulgare* phase, SIX-ROW BARLEY
  2 Lateral spikelets pedicelled, sterile and much smaller in size ..... the *distichum* phase, TWO-ROW BARLEY

Secale cereale Linnaeus, RYE.

Plants annual or biennial, (35)50-120(300) cm tall. Spikes (2)5-12(19) cm long, strictly erect or sometimes nodding when mature, the rachis remaining intact or tardily disarticulating. Spikelets single at the nodes, with 2(3) florets. Glumes linear, 8-20 mm long, terminating in an awn 1-3 mm long. Lemmas linear to narrowly lanceolate, 14-18 mm long, strongly pectinate-ciliate, the awns 7-50 mm long.

×***Triticosecale*** Wittman *ex* A. Camus, TRITICALE.
×*Triticale* Tscherm.-Seys. *ex* Müntzing

Plants annual, to 130 cm tall. Spikes terminal, 8-20 cm long, the spikelets solitary at the nodes with 2-3 florets, the terminatl floret usually reduced. Glumes ovate, 9-12 mm long, asymmetrically keeled and toothed distally, with awns 3-4 mm long. Lemmas ovate, 10-15 mm long, the nerves converging at the apex, with awns 3-50 mm long.

This name ×*Triticosecale* refers to artificial hybrids between wheat (*Triticum*) and rye (*Secale*). There is no valid specific epithet, and the crop generally goes by the common name, triticale. Cultivars may be referred to in the normal way, e.g., ×*Triticosecale* 'Newton' or ×*Triticosecale* 'Bokolo'. The hybrid has been known since the late 1800s, but not until the last 50 years or so has the crop been dcveloped commercially. The genetics of the crop is extremely complex, involving multiple hybridizations, backcrossings, and artificially induced chromosome doubling. The morphological variation is correspondingly diverse, and a plant rarely falls strictly intermediate to the two parents.

Triticum aestivum Linnaeus, WHEAT.

Plants annual, 14-150 cm tall. Spikes (4)6-18 cm long, the rachis persistent. Spikelets single at the nodes, erect or ascending, with 2-5 fertile florets, sometimes with additional sterile florets above. Glumes ovate to broadly elliptic, 6-12 mm long, several-nerved, usually keeled from one of the side nerves, terminating in an awn to 4 cm long, or awnless. Lemmas ovate, 10-15 mm long, with an awn to 12 cm long, or awnless.

This is the common bread wheat of agriculture, a hexaploid derived from goatgrass and emmer wheats, with bearded (awned) and beardless (awnless) forms.

Illustrations on the following page are from USDA Misc. Publ. 200 and Baum & Gupta [Can. J. Bot. 68:1889-1893. 1990.]

Hordeum vulgare, barley

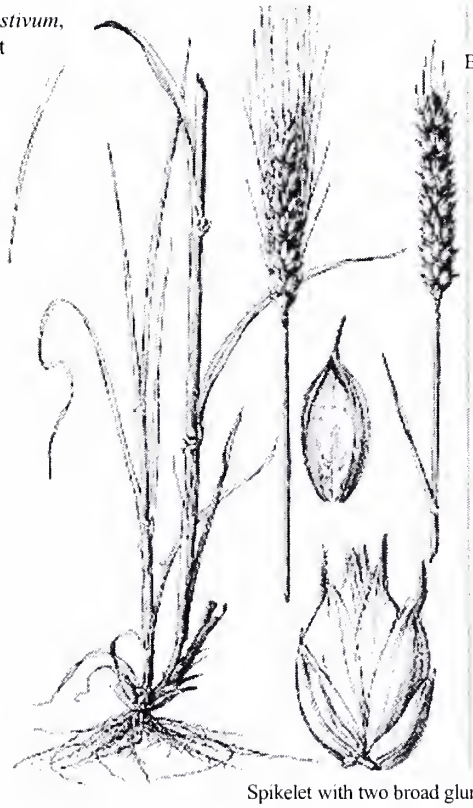
Beardless barley

Triad of spikelets showing the six narrow glumes at the base

Secale cereale, rye

Single spikelet, with two narrow glumes

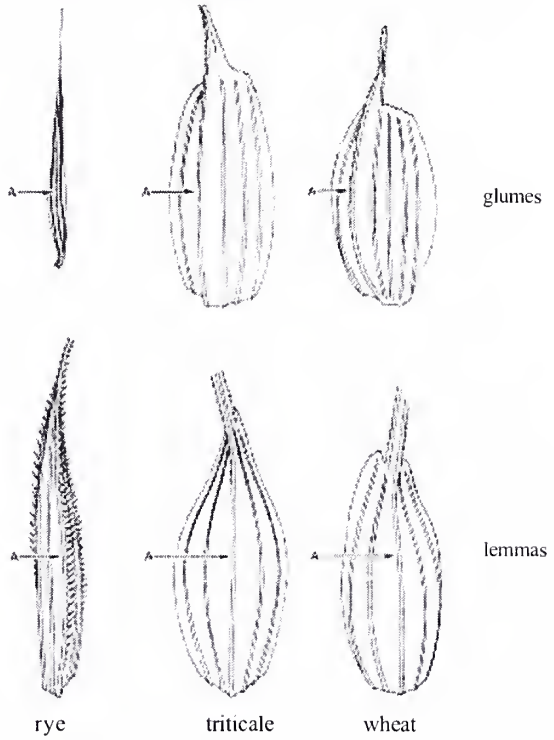
Triticum aestivum, wheat



Beardless form

Spikelet with two broad glumes.

Comparison of glumes and lemmas of rye, triticale, and wheat.



Botanical Literature of Interest

Taxonomy and Floristics

Al-Shehbaz, I.A., K. Mummenhoff, & O. Appel. 2002. ***Cardaria, Coronopus*, and *Stroganowia* are united with *Lepidium* (Brassicaceae).** Novon 12:5-11.

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Boyd, A. 2002. **Morphological analysis of Sky Island populations of *Macromeria viridiflora* (Boraginaceae).** Syst. Bot. 27 (1):116-126.

Ebinger, J.E., D.S. Seigler, & H.D. Clarke. 2002. **Notes on the segregates of *Acacia farnesiana* (L.) Willd. (Fabaceae: Mimosoideae) and related species in North America.** Southwestern Naturalist 47 (1):86-147.

Grant, V. 2001. **Tests of the accuracy of cladograms in *Gilia* (Polemoniaceae) and some other angiosperm genera.** Plant Sys. Evol. 230:89-96.

Grass Phylogeny Working Group. 2001. **Phylogeny and subfamilial classification of the grasses (Poaceae).** Ann. Missouri Bot. Gard. 88(3):373-457.

Levin, R.A. 2002. **Taxonomic status of *Acleisanthes, Selincocarpus*, and *Ammocodon* (Nyctaginaceae).** Novon 12:58-63.

Saltonstall, K. 2002. **Cryptic invasion by a non-native genotype of the common reed, *Phragmites australis*, into North America.** Proc. National Academy Sciences 99(4):2445-2449.

Wilson, P. & M. Valenzuela. 2002. **Three naturally occurring *Penstemon* hybrids.** Western North American Naturalist 62(1):25-31.

Miscellaneous

Mischler, B. 2002. **A radical view of Byophyte biology: mosses are from Mars, vascular plants are from Venus.** BEN 280 (on the web at <http://www.ou.edu/cas/botany-micro/ben/>.

Plant Distribution Reports

New records and significant distribution reports for New Mexico plants should be documented by complete collection information and disposition of a specimen (herbarium). Exotic taxa are indicated by an asterisk (*).

— Richard Worthington [P.O. Box 13331, El Paso, TX 79913]

Carex lativena S. D. Jones and G. D. Jones (Cyperaceae): Otero Co., Guadalupe Mts., Guadalupe Rim (T27S, R20E, Sec. 36, SW tip), 6000 ft., crack in bedrock in canyon bottom, 21 Apr 2001, R. D. Worthington 30420 (UTEP; BRCH).

Simsia lagascaeformis DeCandolle (Asteraceae): Otero Co., Crow Flats, along road to Dog Canyon, edge of graded road in creosote community where water accumulates, growing with *Verbesina encelioides*, 3 Sep 2000, R.D. Worthington 30276 (NMCR, UTEP). [This is the second report of this species for New Mexico.]

— Robert Dorn [P.O. Box 1471, Cheyenne, WY 82003]

Salix bonplandiana Kunth var. ***laevigata*** (Bebb) Dorn (Salicaceae): San Juan Co., Chuska Mts, northwest of Toadlena Trading Post, 6800 ft, 27 May 19989, S. O'Kane 4358 (SJC); Chuska Mts, Upper Palisades Creek, 15 Jul 1998, Roth 225 (SJC).

Salix fragilis Linnaeus (Salicaceae): Mora Co., northwest edge of Cleveland, roadside ditch, 7200 ft, 29 Jul 1997, R. Dorn 7436 (RM); San Juan Co., Aztec, stream bank, 5600 ft, 3 Jul 2001, R. Dorn 8823 (RM).

What's In A Name?

Just who are these guys, anyway? One of the plant names we run into more than any other is *wrightii* or *wrightiana* (there are no *wrightianus*, masculine, in the New Mexico flora) in honor of Charles Wright. Wright (1811-1885), an indefatigable botanical explorer of the 19th century, collected plants mostly for Asa Gray of Harvard (though a graduate of Yale University). He visited the region in 1849 (Texas) and in 1851-52 (mostly New Mexico, environs of Santa Rita, and Arizona) as Surveyor and Botanist for the U.S.-Mexican Boundary Survey (see the lead article in this issue). His southwestern collections were treated in Gray's *Plantae Wrightianae* (1852, 1853). During 1853-1855 he accompanied Ringgold's North Pacific Exploring Expedition, then spent several years collecting in Cuba, the results of which are enumerated in Grisebach's *Plantae Wrightianae*. This is the man of whom Gray said: "Surely no botanist ever earned such scientific remembrance by entire devotion, acute observation, severe exertion, and perseverance under hardship and privation....No name is more largely commemorated in the Botany of Texas, New Mexico, and Arizona than that of Charles Wright." He is remembered in our flora by 51 *wrightii*, 3 *wrightiana*, and the full-name genus *Carlowrightia*.

Botany is the natural science that transmits the knowledge of plants.
— Linnaeus

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Kelly Allred

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Notices

- The latest version (March 5, 2002) of **A Working Index to New Mexico Vascular Plant Names** may be found on the web at <http://web.nmsu.edu/~kallred/herbweb/>.
- **Sedges 2002:** International Conference on Uses, Diversity, and Systematics of Cyperaceae, June 6-8, Deleware State University. Contact Robert Naczi: rnaczi@dsc.edu (e-mail), 302-857-6450 (telephone).
- **Botany 2002:** August 4-7, Madison, Wisconsin. The annual meeting of ASPT as well as of the Botanical Society of America, American Fern Soeiety, Canadian Botanical Association, and the Phycological Society of America. The theme of the meeting will be "Botany in the Curriculum: Integrating Research and Teaching." For information about the meeting, see the web site <http://www.botany2002.org/>.
- **Latin texts online**, ineluding *Species Plantarum, Prodromus, etc.*: <http://eee.uci.edu/~papyri/bibliography/>
- **The 43rd Annual Meeting of the Society for Economic Botany:** The New York Botanical Garden, June 22 - 27, 2002. Symposium (June 23): Origins, Evolution, and Conservation of Crop Plants: A Molecular Approach. Especially for Students (June 25): Workshop: Ethnobotanist's Digital Toolkit. Distinguished Economic Botanist (June 26):Professor Sir Ghillean T. Prance. Visit the SEB website to Register and Submit an Abstract <http://www.econbot.org>.

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An Evolutionary Perspective on Strengths, Fallacies, and Confusions in the Concept of Native Plants

Stephan Jay Gould

[From Arnoldia, Spring 1998. Professor Gould passed away May 20, 2002]

An important, but widely unappreciated, concept in evolutionary biology draws a clear and careful distinction between the historical origin and current utility of organic features. Feathers, for example, could not have originated for flight because five percent of a wing in the early intermediary stages between small running dinosaurs and birds could not have served any aerodynamic function (though feathers, derived from reptilian scales, provide important thermodynamic benefits right away). But feathers were later co-opted to keep birds aloft in a most exemplary fashion. In like manner, our large brains could not have evolved in order to permit modern descendants to read and write, though these much later functions now define an important part of modern utility.

Similarly, the later use of an argument, often in a context foreign or even opposite to the intent of originators, must be separated from the validity and purposes of initial formulations. Thus, for example, Darwin's theory of natural selection is not diminished because later racists and warmongers perverted the concept of a "struggle for existence" into a rationale for genocide. However, we must admit a crucial difference between the two cases: the origin and later use of a biological feature, and the origin and later use of an idea. The first case involves no conscious intent and cannot be submitted to any moral judgment. But ideas are developed by human beings for overt purposes, and we have some ethical responsibility for the consequences of our actions. An inventor may be fully exonerated for true perversions of his intent (Hitler's use of Darwin), but unfair extensions consistent with the logic of original purposes do entail some moral demerit (most academic racists of the nineteenth century did not envision or intend the Holocaust, but some of their ideas did fuel the "final solution").

I want to examine the concept of "native plants" within this framework, for this notion encompasses a remarkable mixture of sound biology, invalid ideas, false extensions, ethical implications, and political usages both intended and unanticipated. Clearly, Nazi ideologues provided the most chilling uses. [1] In advocating native plants along the *Reichsautobahnen,* Nazi architects of the Reich's motor highways explicitly compared their proposed restriction to Aryan purification of the people. By this procedure, Reinhold Tuxen hoped "to cleanse the German landscape of unharmonious foreign substance." [2] In 1942 a team of German botanists made the analogy explicit in calling for the extirpation of *Impatiens parviflora,* a supposed interloper: "As with the fight against Bolshevism, our entire Occidental culture is at stake, so with the fight against this Mongolian invader, an essential element of this culture, namely, the beauty of our home forest, is at st ake." [3]

At the other extreme of kindly romanticism, gentle arguments for native plants have stressed their natural "rightness" in maximally harmonious integration of organism and environment, a modern invocation of the old doctrine of *genius loci.* Consider a few examples from our generation:

> Man makes mistakes; nature doesn't. Plants growing in their natural habitat look fit and therefore beautiful. In any undeveloped area you can find a miraculously appropriate assortment of plants, each one contributing to the overall appearance of a unified natural landscape. The balance is preserved by the ecological conditions of the plaee, and the introduction of an alien plant could destroy this balance." [4]

> Evolution has produced a harmony that contrived gardens defy." [5]

Or this from President Clinton himself (though I doubt that he wrote the text personally), in a 1994 memorandum on "environmentally and economically beneficial practices on federal landscaped grounds": "The use of native plants not only protects our natural heritage and provides wildlife habitat, but also can reduce fertilizer, pesticide, and irrigation demands and their associated costs because native plants are suited to the local environment and climate." [6]

This general argument, of course, has a long pedigree, as well illustrated in Jens Jensen's remark in *Our Native Landscape,* published in his 1939 *Siftings:* "It is often remarked, 'native plants are coarse.' How humiliat-

(Continued on page 2, Native Plants)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(Native Plants, Continued from page 1)
ing to hear an American speak so of plants with which the Great Master has decorated his land! To me no plant is more refined than that which belongs. There is no comparison between native plants and those imported from foreign shores which are, and shall always remain so, novelties." [7]

Yet the ease of transition between this benevolent version and dangerous *Volkist* nationalism may be discerned, and quite dramatically, in another statement from the same Jens Jensen, but this time published in a German magazine in 1937:

> The gardens that I created myself shall . . . be in harmony with their landscape environment and the racial characteristics of its inhabitants. They shall express the spirit of America and therefore shall be free of foreign character as far as possible. The Latin and the Oriental crept and creeps more and more over our land, coming from the South, which is settled by Latin people, and also from other centers of mixed masses of immigrants. The Germanic character of our cities and settlements was overgrown. . . . Latin spirit has spoiled a lot and still spoils things every day. [8]

How slippery the slope between *genius loci* (and respect for all the other spirits in their proper places as well) and "my *locus is* best, while others must be uprooted, either as threats or as unredeemable inferiors." How easy the fallacious transition between a biological argument and a political campaign.

When biologically based claims have such a range of political usages (however dubious, and however unfairly drawn some may be), it becomes particularly incumbent upon us to examine the scientific validity of the underlying arguments, if only to acquire weapons to guard against usages that properly inspire our ethical opposition (for if the biological bases are wrong, then we hold a direct weapon; and if they are right, then at least we understand the argument properly, and can accurately drive the wedge that always separates factual elaims from ethical beliefs).

Any argument for preferring native plants must rest upon some construction of evolutionary theory—a difficult proposition (as we shall see) because evolution is so widely misconstrued and, when properly understood, so difficult to utilize for the defense of intrinsic native superiority. This difficulty did not exist in pre-Darwinian creationist biology, because the old paradigm of "natural theology" held that God displays both his existence and his attributes of benevolenee and omniscience in the optimal design of organic form and the maximal harmony of local eeosystems (see William Paley for the classic statement in one of the most influential books ever written). [9] Native must therefore be right and best because God made each creature for its proper place.

But evolutionary theory fractured this equation of existence with optimality by introducing the revolutionary idea that all anatomies and interactions arise as transient products of complex history, not as created optimalities. Evolutionary defenses of native plants rest upon two quite distinct aspects of the revolutionary paradigm that Darwin introduced. (I shall argue that neither provides an unambiguous rationale, and that many defenders of native plants have mixed up these two distinct arguments, therefore rendering their defense incoherent.)

The Functional Argument Based on Adaptation

Popular impression regards Darwin's principle of nat ural selection as an optimizing force, leading to the same end of local perfection that God had supplied directly in older views of natural theology. If natural selection works for the best forms and most balanced interactions that could possibly exist in any one spot, then native must be best for native has been honed to optimality in the refiner's fire of Darwinian competition. (In critiquing horticulturists for this misuse of natural selection, I am not singling out any group for an unusual or particularly naive misinterpretation. This misreading of natural selection is pervasive in our culture, and also records a primary fallacy of mueh professional thinking as well. [10])

In *Siftings,* Jens Jensen expressed this common viewpoint with particular force:

> There are trees that belong to low grounds and those that have adapted themselves to highlands. They always thrive best amid the conditions they have chosen for themselves through many years of selection and elimination. They tell us that t hey love to grow here, and only here will they speak in their fullest measure. [11]
>
> I have often marvelled at the friendliness of certain plants for each other, which, through thousands of years of selection and elimination, have lived in harmonious relation. [12]

The incoherencies of this superficially attractive notion may be noted in the forthcoming admission, in a work of our own generation, that natural does not always mean lovely. Natural selection does not preferentially lead to plants that humans happen to regard as attractive. Nor do natural systems always yield rich associations of numerous, well-balanced species. Plants that we label "weeds" will dominate in many circumstances, however transiently (where "transient" can mean more than a human lifetime on the natural time scales of botanical suceession). Such weeds are often no less "native"—in the sense of evolving indigenously—than plants of much more restricted habitat and geography. Moreover, weeds often form virtual monocultures, choking out more diverse assemblages than human intervention could maintain. C.A. Sm yser et al. admit all this, but do not seem to grasp the logical threat thus entailed against an equation of "natural" with "right" or "preferable": "You may have heard of homeowners who simply stopped mowing or weeding and now call their landscapes "natural." The truth is that these so-called no-work, natural gardens will be long dominated by exotic weed species, most of which are pests and look downright ugly. Eventually, in 50 to 100 years, native plants will establish themselves and begin to create an attractive environment," [13] But not all "weed" species can be called "exotic" in the sense of being artificially imported from other geographic areas. Weeds can be indigenous too, though their geographic ranges tend to be large, and their means of natural transport well developed.

The evolutionary fallacy in equating native with best adapted may be simply stated by specifying the essence of natural selection as a causal principle. As Darwin recognized so clearly, natural selection produces adaptation to changing local environments—and that is all. The Darwinian mechanism includes no concept of general progress or universal betterment. The "struggle for existence" can only yield local appropriat eness. Moreover, and even more important for debates about superiority of native plants, natural selection is only a "better than" principle, not an optimizing device. That is, natural selection can only transcend the local standard and cannot operate toward universal "improvement"—for once a speeies prevails over others at a location, no pressure of natural selection need arise to promote further adaptation. (Competition within species will continue to eliminate truly defeetive individuals and may promote some refinement by selection of fortuitous variants with still more advantageous traits, but the great majority of successful species are highly stable in form and behavior over long periods of geological time—not because they are optimal, but beeause they are locally prevalent.)

For this reason, many native plants, evolved by natural selection as adaptive to their regions, fare poorly against introduced species that never experienced the local habitat. If natural selection produced optimality, this most common situation could never arise, for native forms would be "best" and would prevail in any competition. against intruders. But most Australian marsupials succumb to placentals imported from other continents, despite tens of millions of years of isolation, during which the Australian natives should have attained irreplaeeable incumbency, if natural selection worked for optimality rather than merely getting by. And *Homo sapiens,* after arising in Africa, seems able to prevail in any exotic bit of real estate, almost anywhere in the world!

Thus the first-order rationale for preferring native plants—that, as locally evolved, they are best adapted—cannot be sustained. I strongly

(*Continued on page 3, Native Plants*)

(Native Plants, Continued from page 2)
suspect that a large majority of well-adapted natives could be supplanted by some exotic form that has never experienced the immediate habitat, In Darwinian terms, this exotic would be better adapted than the native—though we may well, on defensible aesthetic or even ethical grounds, prefer the natives (for nature's factuality can never enjoin our moral decisions).

We may, I think, grant only one limited point from evolutionary biology on the subject of adaptation in native plants. At least we do know that well-established natives are adequately adapted, and we can observe their empirical balances with other local species, We cannot know what an exotic species will do—and many, and tragic, are the stories of exotics imported for a restricted and benevolent reason that then grew like kudzu to everyone's disgust and detriment. We also know that natives grow appropriately—though not necessarily optimally—in their environment, while exotics may not fit without massive human "reconstruction" of habitat, an intervention that many ecologically minded people deplore. I confess that nothing strikes me as so vulgar or inappropriate as a bright green lawn in front of a mansion in the Arizona desert, sucking up precious water that already must be imported from elsewhere. A preference for natives does foster humility and does counteract human arrogance (always a good thing to do)—for such preference does provide the only sure protection against our profound ignorance of consequences when we import exotics. But the standard argument—that natives should be preferred as best adapted—is simply false within Darwinian theory.

The Geographic Argument Based on Appropriate Place

This argument is harder to formulate, and less clearly linked to a Darwinian postulate, but somehow seems even more deeply embedded (as a fallacy) into the conventional argument for preferring native plants. This argument holds that plants occupy their natural geographic ranges for reasons of maximal appropriateness. Why, after all, would a plant live only in this-or-that region of 500 square kilometers unless this domain acted as its "natural" home—the place where it, uniquely, and no other species, fits best. Smyser et al., for example, write: "In any area there is always a type of vegetation that would exist without being planted or protected. This native vegetation consists of specific groups of plants that adapted to specific environmental conditions." [14] But the deepest principle of evolutionary biology—the construction of all current biological phenomena as outcomes of contingent history, rather than optimally manufactured situations—exposes this belief as nonsense.

Organisms do not necessarily, or even generally, inhabit the geographic area best suited to their attributes. Since organisms (and their areas of habitation) are products of a history laced with chaos, contingency, and genuine random-ness, current patterns (although workable, or they would not exist) will rarely express anything close to an optimum, or even a "best possible on this earth now"—whereas the earlier notion of natural theology, with direct creation of best solutions, and no appreciable history thereafter (or ever), could have validated an idea of native as best. Consequently, although native plants must be adequate for their environments, evolutionary theory grants us no license for viewing them as the best-adapted inhabitants conceivable, or even as the best available among all species on the planet.

An enormous literature in evolutionary biology documents the various, and often peculiar, mechanisms whereby organisms achieve fortuitous transport as species spread to regions beyond their initial point of origin. Darwin himself took particular interest in this subject, During the 1850s, in the years just before publication of the *Origin of Species* in 1859, Darwin wrote several papers on the survival of seeds in salt water (how long would they float without sinking? would they still germinate after such a long bath?). He determined that many seeds could survive long enough to reach distant continents by floating across oceans—and that patterns of colonization therefore reflect historical accidents of available pathways, and not a set of optimal environments.

Darwin then studied a large range of "rarely efficient" means of transport beyond simple floating on the waves: for example, natural rafts of intertwined logs (often found floating in the ocean hundreds of miles from river mouths), mud caked on birds' feet, residence in the gut of birds with later passage in feces (Darwin and others studied, and often affirmed, the power of seeds to germinate after passage through an intest inal tract). In his usually thorough and obsessive way, Darwin assiduously collected information and found more than enough means of fortuitous transport. He wrote to a sailor who had been shipwrecked on Kerguelen Island to find out if he remembered any seeds or plants growing from driftwood on the beach. He asked an inhabitant of Hudson Bay if seeds might be carried on ice floes. He studied the contents of ducks' stomachs. He was delighted to receive in the mail a pair of partridges' feet caked with mud; he rooted through bird droppings. He even followed a suggestion of his eight-year-old son that they float a dead and well-fed bird. Darwin wrote in a letter that "a pigeon has floated for 30 days in salt water with seeds in crop and they have grown splendidly." In the end, Darwin found more than enough mechanisms to move his viable seeds.

"Natives," in short, are the species that happened to find their way (or evolve *in situ),* not the best conceivable for a spot. As with the first argument about adaptation, the proof that current incumbency as "native" does not imply superiority against potential competitors exists in abundance among hundreds of imported interlopers that have displaced natives throughout the world: eucalyptus in California, kudzu in the American southeast, rabbits and other placental mammals in Australia, and humans just about everywhere.

"Natives" are only those organisms that first happened to gain and keep a footing. We rightly decry the elitist and parochial claims of American northeast WASPs to the title of native, but (however "politically incorrect" the point), the fashionable status of Indians" (so-called by Columbus' error) as "Native Americans" makes just as little sense in biological terms. "Native Americans" arrived in a geological yesterday, some 20,000 years ago (perhaps a bit earlier), on the geographic fortuity of a pathway across the Bering Strait. They were no more intrinsically suited to New World real estate than any other people. They just happened to arrive first.

In this context, the only conceivable rationale for the moral or practical superiority of "natives" (read first-comers) must lie in a romanticized notion that old inhabitants learn to live in ecological harmony with surroundings, while later interlopers tend to be exploiters. But this notion, however popular among "new agers," must be dismissed as romantic drivel. People are people, whatever their technological status; some learn to live harmoniously for their own good, and others do not to their own detriment of destruction. Preindustrial people have been just as rapacious (though not so quickly perhaps, for lack of tools) as the worst modern clear-cutters. The Maori people of New Zealand wiped out a rich fauna of some twenty moa species within a few hundred years. The "native" Polynesians of Easter Island wiped out everything edible or usable (and, in the end, had no logs to build boats or to raise their famous statues), and finally turned to self-destruction.

In summary of my entire argument from evolutionary theory, "native" plants cannot be deemed biologically best in any justifiable way (note that I am emphatically not speaking about ethical or aesthetic preference, for science cannot adjudicate these considerations). "Natives" are only the plants that happened to arrive first and be able to flourish (the evolutionary argument based on geography and history), while their capacity for flourishing only indicates a status as "better than" others available, not as optimal or globally "best suited" (the evolutionary argument based on adaptation and natural selection).

Speaking biologically, the only general defense that I can concoct for natives—and I regard this argument as no mean thing—lies in protection thus afforded against our overweening arrogance. At least we know what natives will do in an unchanged habitat, for they have generally been present for a long time and have therefore stabilized and adapted. We never know for sure what an imported interloper will do, and our consciously planted exotics have "escaped" to disastrous spread and extirpation of natives (the kudzu model) as often as they have supplied the intended horticultural or agricultural benefits.

As a final ethical point (and I raise this issue as a concerned human being, not as a scientist, for my profession can offer no direct moral insight), I do understand the appeal of the ethical argument that we should

(*Continued on page 4, Native Plants*)

(Native Plants, Continued from page 3)

leave nature alone and preserve as much as we can of what existed and developed before our very recent geological appearance. Like all evolutionary biologists, I treasure nature's bounteous diversity of species (the thought of half a million described species of beetles—and many more yet undescribed—fills me with an awe that can only be ealled reverent). And I do understand that much of this variety lies in geographic diversity (different organisms evolved in similar habitats in many plaees on our planet, as a result of limits and aecidents of access). I would certainly be horrified to watch the botanical equivalent of McDonalds' uniform arehitecture and euisine wiping out every local diner in America. Cherishing native plants does allow us to defend and preserve a maximal amount of local variety.

But we must also acknowledge that strict "nativism" has an ethieal downside inherent in the notion that "natural" must be right and best, for such an attitude easily slides to the Philistinism of denying any role to human intelligence and good taste, thence to the foolish romantieism of viewing all that humans might accomplish in nature as "bad" (and how then must we judge Frederick Law Olmsted's Central Park), and even (in an ugly perversion)—but realized in our time by Nazi invoeation of nativist doctrine—to the claim that my "native" is best and yours only fit for extirpation.

The defense against all these misuses, from mild to virulent, lies in a profoundly humanistie notion as old as Plato, one that we often advance in sheepish apology but should rather honor and cherish: the idea that "art" must be defined as the caring, tasteful, and intelligent *modification* of nature for respectful human utility. If we can practice this art in partnership with nature, rather than by exploitation (and if we also set aside large areas for rigidly minimal disturbance, so that we never forget, and may continue to enjoy, what nature aecomplished during nearly all of her history without us), then we may achieve optimal balanee.

People of goodwill may differ on the best botanical way to eapture the "spirit of democracy"—from one end of maximal "respect" for nature by using only her unadorned and locally indigenous ("native") products, to the other of maximal use of human intelligence and aesthet ic feeling in sensitive and "respectful" mixing of natives and exoties, just as our human populations have so benefited from imported diversity. Jens Jensen extolled the first view: "When we are willing to give each plant a ehance fully to develop its beauty, so as to give us all it possesses without any interference, then, and only then, shall we enjoy ideal landscapes made by man. Is not this the true spirit of democracy? Can a demoerat cripple and misuse a plant for the sake of show and pretense?" [15]

But is all cultivation—hedgerows? topiary?—crippling and misuse? The loaded nature of ethieal language lies exposed herein. Let us consider, in closing, another and opposite definition of democracy that eertainly has the sanction of ancient usage. *J.* Wolschke-Bulmahn and G. Groning cite a stirring and poignant argument made by Rudolf Borchardt, a Jew who later died trying to escape the Nazis, against the nativist doetrine as perverted by Nazi horticulturists: "If this kind of garden-owning barbarian became the rule, then neither a gillyflower nor a rosemary, neither a peach-tree nor a myrtle sapling nor a tea-rose would ever have crossed the Alps. Gardens connect people, times and latitudes. If these barbarians ruled, the great historic process of acclimatization would never have begun and today we would horticulturally still subsist on acorns. . . . The garden of humanity is a huge democracy." [16]

I cannot state a preferenee in this wide sweep of opinions, from pure hands-off romanticism to thorough over-management (though I trust that most of us would condemn both extremes). Absolute answers to such ethical and aesthetic questions do not exist in any ease. But we will not achieve clarity on this issue if we advocate a knee-jerk equation of "native" with morally best, and fail to reeognize the ethical power of a contrary view, supporting a sensitive cultivation of all plants, whatever their geographic origin, that can enhance nature and bring both delight and utility to humans. Is it more "democratic" only to respect organisms in their natural places (how, then, could any non-African human respect himself), or shall we persevere in the great experiment of harmonious and mutually reinforcing geographic proximity—as the prophet Isaiah sought in his wondrous vision of a place where the wolf might dwell with the lamb and sueh non-natives as the calf and the lion might feed together—where "they shall not hurt nor destroy in all my holy mountain."

Endnotes

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14 Ibid., xi.

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16 Wolschke-Bulmahn and Groning, "The Ideology of the Nature Garden," 80.

Stephen J. Gould is professor of geology at Harvard University, curator of invertebrate paleontology at the Museum of Comparative Zoology, and Alexander Agassiz Professor of Zoology. Among his books and articles on the history of evolution and related topics are *Ever Since Darwin* (1977), *The Panda's Thumb* (1980), *The Flamingo's Smile* (1985), *Wonderful Life* (1989), and *Eight Little Piggies* (1993). This article evolved from a paper presented at the 1994 Studies in Landscape Architecture symposium at Dumbarton Oaks—"Nature and Ideology: Natural Garden Design in the Twentieth Century"—and published in 1997 under the same title, edited by Joachim Wolschke-Bulmahn.

Botany is the natural science that transmits the knowledge of plants.
— Linnaeus

Frontera — The Last Word?

Tom Todsen

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[In response to the mention of Charles Wright's collection site, *Frontera,* by Richard Spellenberg in our last issue ("*Cleome multicaulis* on the Rio Grande in southern New Mexico?"), Tom sent me a copy of his article in *La Posta* (July 1990), reprinted here with permission. — ed.]

In August of 1848, Thomas Frank White, in the company of United States troops, arrived in the El Paso area. White's purpose was to establish a custom house at the port-of-entry between the United States and Mexico along the Camino Real from Santa Fe to Chihuahua. The road crossed the Rio Grande at Vado de Los Muleros (Mule Driver's Ford), just north of the pass between the Franklin Mountains and Cerro de Los Muleros (now Sierra de Cristo Rey). This location is about eight miles from the cathedral in El Paso del Norte (now Ciudad Juarez), and about one mile northwesterly of the pass itself. The road south from the crossing was the easier way to go to El Paso del Norte since it avoided the canyons and arroyos of the pass and went around the westside of Cerro de Los Muleros. This is the road used by Wislizenius on his journey to Mexico in 1846.

White built a store and a house and cultivated the surrounding land, which became known as Rancho Frontera or White's Rancho [Frontera #1 on map]. Several months later he was appointed prefect of the area by Colonel John M. Washington, Military Governor of New Mexico. In a letter dated November 28, 1848, White informed the prefecto of El Paso del Norte that he had received instructions from the Governor of the Territory of New Mexico "to extend my jurisdiction as a magistrate of this territory over the towns situated on the east side of the Rio del Norte below the town of El Paso". He stated that his authority would extend to the settlements of Ysleta, Soeorro, and San Elizario. He issued grants of land and collected taxes in the name of the Territory.

In 1849, White asked Major Jefferson Van Horn, commanding the troops at Fort Bliss, to aid him in collecting taxes. Van Horn sent a letter to Colonel John Munroe, then Military Governor of New Mexieo, asking for guidance. Col. Munroe replied on December 28, 1849, that the military should support the civil authority of the Territory of New Mexico and aid the New Mexico officials in the administration of justice until the boundary between New Mexico and Texas was settled.

White's control apparently remained in effect until El Paso County, Texas, was fully organized. It is diffieult to determine the exact date since many of the alcaldes appointed by White remained as officials after reorganization under Texas laws. On May 1, 1850, the Governor of Texas appointed T. F. White as notary for the El Paso area, so White held appointments from both New M exico and Texas at the same time, which just adds to the confusion.

The "Reeord of Appointments of Postmasters - New Mexieo" shows Frontera, Socorro, and San Elizario all authorized in Socorro County, New Mexico, on April 17, 1851, with White the postmaster at the former. All three were simultaneously discontinued on March 12,1852, perhaps because the postal authorities in Washington realized that Texas and New Mexico had reached a settlement of their boundary dispute. The earliest post office for El Paso County shown in the "Records of Appointments of Postmasters—Texas" are El Paso and San Elizario, both authorized July 26, 1852, after the flood that wiped out Frontera (see below).

When U. S. Boundary Commissioner John F. Bartlett arrived in the area in November 1850, White offered his ranch as a base of operations. By letter of December 23, 1850, he gave Bartlett two options. The first was to buy the whole ranch for $3,000 and the second, to buy two acres for an observatory for $1 and to rent White's buildings for $65 a month. In a letter of January 21, 1851, White concurred in Bartlett's acceptance of the second option.

This set the stage for Major William P. Emory, who did the actual survey of the US-Mexico border for the Boundary Commission. Emory, as shown by his diary and Field notes, worked on the survey until 1853. He stayed at White's ranch for part of this time and had his observatory on a nearby hill where he could look through the pass and see the cathedral in El Paso del Norte (his notes say the location of the cathedral was determined from the observatory using light flashes from the cathedral). He stated the elevation of his observatory as 3,780 feet. There is only one hilltop near the location of the Frontera buildings that has both this elevation and line-of-sight through the pass. Oddly enough, the current USGS map shows ruins on this hill at 3,780 and 3,800 feet [see map].

The area had experienced a drought from 1849 through 1851 so there had been no problem with the river shifting course sinee White had arrived. However, on the night of June 25, 1852, Emory's diary says that he awoke to a roaring noise. Emory and his assistant stepped outside into knee-deep water. They quickly gathered their surveying instruments and waded through chest-deep water to the observatory hill where they spent the night. The next morning the river was flowing at the base of the hill and their camp, along with the Frontera buildings, was gone. Thus, the river had moved east and the principal Frontera location was now on the west side of the river, which was in Mexico until the Gadsden Purchase of 1853. The Frontera buildings were later reconstructed at a new location on the east side of the river. In 1854, T. Frank's brother, Charles, was still doing business there. However, with the Gadsden Purchase, Frontera was no longer on the border and was no longer a custom house. The later location of Frontera and the new location of the river are shown on Emory's map. The new location of Frontera [Fronter #2 on map] is about two miles above the pass, rather than one mile as the original was.

The new location of the river is the same as the present New Mexico-Texas boundary. Thus, the location of the Frontera post office was actually in what is now New Mexico in the limits of the town of Sunland Park. The second location of Frontera has been marked with a stake and a buried marker. The stake is no longer there but the marker is in the railroad right-of-way near the intersection of Doniphan and Sunland Park drives in El Paso. This later location is what is shown on the early maps of the area and that is what has caused the confusion about the location of the Frontera post office in 1851-52.

Why did White change his manuscript postmarking from New M exico to Texas? Probably because the agreement had come about the latter part of 1851. Besides, he had strong political ambitions and wanted to go along with his constituents. When his political influence began to wane, he left and went west to Fort Buchanan where he became postmaster from 1859 until the post was abandoned in 1862.

To sum up what happened to the original location of the Frontera post offiee [Frontera #1 on the map]: Obviously it was originally in New Mexico and under New Mexico control sinee Thomas Wright was a New Mexico official. At some time, probably at the beginning of 1852, the same spot was in Texas. With the flood of 1852, it was west of the river and in Mexico. With the Gadsden Purchase, it reverted to New Mexico. Sometime before the survey of 1917, the river had shifted again leaving the site again in Texas. Now, with the survey and agreement of 1930, the original Frontera site is back in New Mexico.

(Continued on page 6, Frontera)

(Frontera, Continued from page 5)

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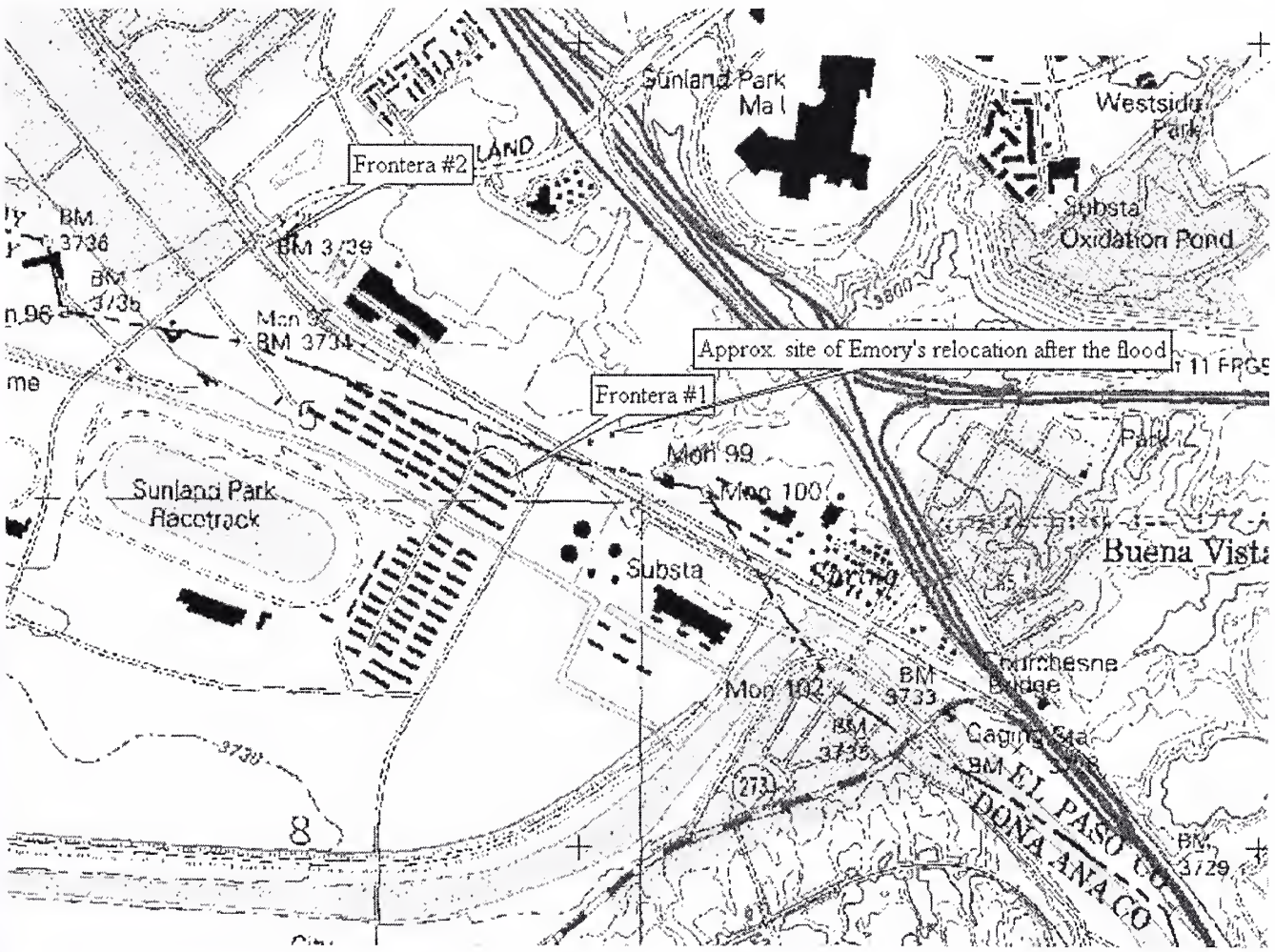

What's In A Name?

A Short Botanical Biography of A.L. Hershey

The study of the names of New Mexico plants is a study of the history of botany, not only in the American Southwest, but throughout the world. The early years of exploration are revealed in the names of Abert, Bigelow, Fendler, James, Parry, Wislizenus, and Wright. The European origin of much of our botanical science is reflected in the lives of Beckmann, Bélanger, Bladh, Boutelou, Lindheimer, Reverchon, Roemer, Schaffner, and Schiede. We're reminded of the scientist-patrons whose careers greatly benefited from the inventory of New Mexico flora by the names Gray, Grisebach, Hackel, Hooker, and Torrey. And, of course, our own resident botanists are remembered through the names Metcalfe, Standley, and Wooton, to name a few from the early days.

A New Mexico botanist not so well known is **Arthur LeRoy Hershey**, remembered by the single eponym of *Chaetopappa hersheyi* for the mat-like cliff-daisy endemic to steep limestone ledges in the Guadalupe Mountains of southeastern New Mexico and western Texas.

Little is known about A.L. Hershey. His birth and early years are unknown to us. He first came to New Mexico in 1934, in time for the beginning of the fall semester at the New Mexico College of Agriculture and Mechanic Arts. He had obtained his bachelor's degree from Kansas State College in 1927, an M.S. from Iowa State in 1930, staying on for a Ph.D. in 1934, and was beginning his botanical career as an assistant professor of biology. His work for both the Master's and Doctoral degrees was on corn, studying the ontogeny, structure, and development of the stem and leaves. As an assistant professor from 1934-1944, and an associate professor from 1945-1949, Hershey taught many of the general biology and botany courses at the college. He also became the resident plant taxonomist at the college, teaching courses in southwestern flora, plant systematics, trees and shrubs, and the like, as well as responding to plant identification queries from county agents and citizenry throughout the state. There are no photos of Hershey in any of the college yearbooks, The Swastika.

John W. 'Bus' Riley, of Las Cruces, remembers taking General Botany with "Doc Hershey," as he was called by all the students. This was in 1946, Bus's first semester in college after WWII. He remembers him as a fairly short, somewhat heavyset man, perhaps about 5'8" and 180 lbs. One summer Hershey helped Bus get a job at the ag lab studying fringed tapeworms in sheep. He recollects that Hershey was unmarried and lived alone.

A partial search of the biology herbarium at New Mexico State University (NMC) revealed New Mexico collections by Hershey from 1933 [error for 1934?] through 1959. His formal (or at least numbered) collecting apparently began when he came to New Mexico, as his number 13 shows up in October 1934, a specimen of *Panicum obtusum* from Ropes Springs, Doña Ana County. Specimens were found from 21 different counties and 28 plant families, with Doña Ana County and the Fabaceae, respectively, being most heavily represented.

Some of Hershey's wanderings through New Mexico turned up novelties, both for the state and for science. He reported at least 17 species new to the state in three short publications in Leaflets of Western Botany, in 1938, 1940, and 1944, the last in collaboration with Philip Leyendecker, Jr. The only new species based on a Hershey collection, *Chaetopappa hersheyi*, was found in the Guadalupe Mountains during explorations in 1939, and was named by S.F. Blake in 1946. His only other known publication was in 1945, an Agricultural Experiment Station bulletin discussing poisonous plant problems in the state.

The course catalogs reveal that spring semester 1949 was Hershey's last at New Mexico College. It is not known why he left or where he went. His botanical activity apparently ceased, as he is absent from botanical bibliographies and inventories after this time.

Publications of A.L. Hershey

Notes on plants of New Mexico—I. Leaflets of Western Botany 2(8):138. 1938.

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Eponymy

Chaetopappa hersheyi S.F. Blake [A new *Chaetopappa* from the Guadalupe Mountains of New Mexico and Texas. Proceedings of the Biological Society of Washington 59:47-48. 1946.]

Acknowledgments

Much thanks to the helpful staff of the Rio Grande Historical Collections/Hobson-Huntsinger University Archives at New Mexico State University. Richard Spellenberg kindly searched the database holdings of NMC. And sincere thanks to Bus Riley, whom I met entirely by chance on the very day that I began this little enquiry, and who helped bring A.L. Hershey to life.

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The New Mexico Botanist

Number 24 October 1, 2002

A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University.

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Additions to the Flora of New Mexico from the San Juan Basin Flora Project

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The San Juan Basin Flora Project is a multi-year project whose aim is to document all of the native and naturalized vascular plants in the San Juan River Drainage of Arizona, Colorado, New Mexico, and Utah. Here we report 53 taxa previously unknown from New Mexico that were discovered during our field and herbarium work.

A brief description of our methods follows. For a more detailed account, see our (Heil and O'Kane) up-coming paper which will appear in the December issue of *Harvard Papers in Botany* (Catalog of the Four Corners Flora, Vascular Plants of the San Juan River Drainage, Arizona, Colorado, New Mexico and Utah). The Flora Project website has additional information, as well as a list of seientific collaborators (www.sanjuancollege.edu/Herbarium/projects.htm).

An initial working list of the flora was constructed from the collections at San Juan College herbarium (SJNM). To this list were added plants and their localities known from other local herbaria and from available theses and checklists. This initial list, then, consisted solely of plants documented by voucher specimens. The list was vastly expanded by the addition of *potential* taxa gleaned from recent floristic treatments (e.g, Flora of New Mexico, Great Basin Flora, Arizona Flora, Flora of Northern Arizona) as well from monographs and taxon-specific treatments of major groups and from older, historical floras. Published volumes of the Flora of North America were also consulted. Based on known voucher specimens and from these sources, a brief habitat description was compiled for each species to aid in field work. Once the working list of known and potential taxa was completed, field work began. We are attempting to survey all habitat types/geological strata in the study area in every county with an eye to verifying the presence of species predicted to be present. New records are incorporated into the working list at the end of each fie ld season. A master set of voucher specimens is maintained at San Juan College (SJNM). A revised list is created for the upcoming field season. During the later stages of the project, specimens from the following herbaria were consulted and were added to the improving catalogue: Colorado State University, Northern Arizona University, Ft. Lewis College, University of Northern Iowa, Museum of Northern Arizona, Navajo Heritage Herbarium, New Mexieo State University, Rancho Santa Ana, New Mexico State University (Range Science Herbarium), Rocky Mountain Herbarium, San Juan College, Brigham Young University, University of Colorado Herbarium, University of New Mexico, and the herbarium at Mesa Verde National Park. Five unpublished working versions of the list were created since 1998. The sixth, which contains only taxa documented by an herbarium specimen, will appear in *Harvard Papers in Botany*. As of this writing, we have documented 2490 unique biological entities (species and infraspecific taxa) in the San Juan Basin.

Our work was substantially improved because of the access granted to the Jicarilla Apache, Southern Ute, and Navajo Reservations. In the past, these areas have been under-collected and under-explored due to their remoteness and the need to have collecting permits. Unfortunately, a significant gap in our collections exists for Ute Mountain in the southwestern corner of Colorado because the Ute Mountain Ute Tribe would not grant us a collecting permit.

(Continued on page 2, San Juan Basin)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(San Juan Basin, Continued from page 1)

We are currently finishing the third year of a five-year grant provided by Mr. Tommy Bolack, of the B-Square Ranch in Farmington and San Juan College. This generous grant has funded field work and, in the near future, will provide funds for publication. The final publication will have keys to each taxon, complete botanical descriptions, synonymy, ethnobotanical information, line drawings (500), watercolors (ca. 50), and photographs (at least 64).

List of New Mexico additions:

Cymopterus terebinthinus (Hook.) T. & G. var. ***petraeus*** (Jones) Goodrich (Apiaceae): San Juan County; Navajo Nation; Carrizo Mountains; 2.25 miles southeast of Bechhbito Dome and 1.0 mile north of Teec chin ahi spring; Growing in joint fractures and shallow gravels along rocky channel bottom; exposed weathered Salt Wash member of Upper Jurassie Morrison Formation; Pinyon-Juniper with cliffrose, mountain mahogany, galleta and mutton grass community; (UTM; NAD 27) 0675349, 4073053 ; 5740 ft.; April 02, 2001. Arnold Clifford 01-37 (SJNM).

Arnica fulgens Pursh (Asteraceae): San Juan County: Navajo Nation; Chuska Mountains. South of Washington Pass; along the edges of a small pond. Crystal NM, quadrangle (7.5 min). Ponderosa pine forest UTM 12 690268 UTM S 3990798. 09 July 1998. D. Roth 246 (SJNM, Navajo Heritage).

Chamaechaenactis scaposa (Eastw.) Rydb. (Asteraceae): San Juan County: Navajo Nation, highway to Toadlena from US 666. First major dirt road west of powerline. Hills west of road; ridge south of To-hil-has-idi Wash. Mancos Formation; T24N, R19W, S16 SE1/4; 1900 m. 29 April 1995. K. Heil & A.Clifford 8757 (SJNM).

Cirsium chuskaense R.J. Moore & C. Frankton (Asteraceae): San Juan Co., Sanostee Wash ca. 4 miles west of Sanostee, near old abandoned cabin with a corral, Wingate Formation, 7095 ft, N36° 23'23" W109°01'08", 5 Sep 2002, K. Heil & A. Clifford 20568 (SJNM).

Ericameria nauseosa (Pallas ex Pursh) G.L. Nesom & G.I. Baird var. ***turbinata*** (M.E. Jones) G.L. Nesom (Asteraceae): San Juan Co., Sanostee Wash ca. 4 miles west of Sanostee, near old abandoned cabin with a corral, Wingate Formation, 7095 ft, N36° 23'23" W109°01'08", 5 Sep 2002, K. Heil & A. Clifford 20563 (SJNM).

Erigeron compactus Blake var. ***consimilis*** (Cronq.) S. F. Blake (Astcraceae): San Juan County: Navajo Nation, highway to Toadlena from US 666. First major dirt road west of powerline. Hills west of road ca .5 mi. west of Tsin-nas-kid anticline. T24N, R19W, S20 SW ¼ ; 1900 m. 29 April 1995. K. Heil & A. Clifford 8739 (SJNM).

Erigeron eatonii A. Gray (Asteraceae): San Juan County: Navajo Nation. Beautiful Mountain Road on the southern side of mountain. Near the junetion of small road that leads around the east side of the mountain. 8100 ft. 10 May 2000. K. Heil & A. Clifford 14538 (SJNM).

Erigeron engelmannii A. Nels. (Asteraceae): San Juan County; Navajo Nation; Tertiary terrace-glacial outwash riverine deposit; 1.5 mile southwest of San Juan river - Hogback Monocline crossing; Shadscale, winterfat, galleta, purple threeawn and indian ricegrass community; siltysand to sandy soils with small rounded boulders and gravel; T29N, R16W, Sec.17; 5170 ft.; Arnold Clifford 00-738 (SJNM).

Helianthus maximiliani Schrad. (Asteraceae): San Juan County: Navajo Nation, ca. 7 miles south of Farmington on Highway 371. Roadside along NAPI fields. 15 Sep 1995. K. Heil 9443 (SJNM).

Hymenoxys helenoides (Rydb.) Cockerell (Asteraceae): San Juan County: Navajo Nation. Chuska Mountains; 3.2 miles west of Washington Pass summit. Meadow with ponderosa pine. T21N, R19W, S6. 2460 m. 12 August 1987. K. Heil & John Anderson 3738 (SJNM). [Second report for New Mexico—ed.]

Tetraneuris acaulis (Pursh) Greene var. ***nana*** (Welsh) Kartesz & Gandhi (Asteraceae): San Juan County: Navajo Nation, ca. 3 miles due west of Sanostee on main road (paved). Ca. 2/10 mi. north of abandoned cabin along wind swept ridge. Pinyon-juniper community. Todilto limestone. 36°22'43"N 109°00'53"W. 7740 ft. 4 Sep 2000. K. Heil & A. Clifford, 15633 (SJNM).

Senecio serra Hook. var. ***admirabilis*** (Greene) A. Nels. (Asteraceae): Rio Arriba County: Chromo Mountain. Between end of primitive logging road and road to the summit of mountain. White fir, Douglas fir, and aspen. 36°57'52"N 106°44'03"; 09 Sep 2000. K. Heil & W. Mietty, 15677 (SJNM).

Symphyotrichum campestre (Nutt.) G. L. Nesom (Asteraceae): McKinley County: Near Pueblo Pintado Ruins. Ca. .5 miles north of the ruins; along the Chaco River. Riparain community with Rocky Mountain bee plant and salt grass. Heavily grazed. 35°59'21"N 107°41'15"W; 6,514 ft. 24 Sep 2000. K. Heil & A. Clifford, 15933 (SJNM).

Symphyotrichum ciliatum (Ledeb.) G. L. Nesom (Asteraceae): San Juan County: B-Square Ranch. Small marsh ca. .5 mi east of Bolack Lake. 50 meters south of road in alkaline soils along floodplain. 36°42'23.3"N 108° 11'29.6"S; 5300 ft. 28 Sep 1999. K. Heil 14324 (SJNM). [Second report for New Mexico—ed.]

Symphyotrichum ericoides (L.) G. L. Nesom var. ***pansum*** (Blake) G. L. Nesom (Asteraceae): San Juan County: City of Aztec, just north of State Highway 550; meadow; alluvium; T30N, R11W, Section 9; 5640 ft. 29 August 1987. K. Heil 3778 (SJNM).

Catalpa speciosa (Warder) Warder ex Engelm. (Bignoniaceae): San Juan County: Farmington; near the junction of San Juan Blvd. and Hutton. Just west of Sandy's Automotive. Escape; sandy soils. 36°43'41"N 108°11'45"; 5300 ft. 14 Sep 2001. K. Heil & W. Mietty 17936 (SJNM).

Cardamine pensylvanica Muhl. ex Willd. (Brassicaceae): San Juan County: Farmington. South Farmington Quad. Vine

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Ave. across from the softball fields. Along an irrigation eanal. Saline soils; riparian. T29N, R13W, S10 SW ¼ ; 5380 ft. 5 May 1996. K. Heil 9469 (SJNM).

Descurainia pinnata (Walt.) Britt. var. ***intermedia*** (Rydb.) C. L. Hitchc. (Brassieaceae): McKinley County: Navajo Nation, Dalton Pass Road south of Navajo 9. Junction with the first major bend in dirt road. Two track past a tan water tank (south). 4-wheel drive road up the escarpment, ca. 1 mile south of water tank. Mesa Verde Group. Slickrock with scattered pinyon-juniper. 16 May 2000. K. Heil, S. L. O'Kane, Jr. & A. Clifford, 14559B (SJNM).

Erysimum cheiranthoides L. (Brassicaceae): San Juan County: Along the Los Piños River just south of La Boca, Colorado. Near Knowlton Hill. T32N, R7W, S8. 18 May 1984. J. M. Porter 84-082 (SJNM).

Lepidium montanum Nutt. var. ***montanum*** (Brassicaceae): Rio Arriba County: 1 mile towards the Diamante Raneh from US 84. Mancos clay hills. *Artemisia nova* & montane grasses. 36°56'05"N 106°48'49"W. 9 Sep 2000. K. Heil & W. Mietty 15703 (SJNM).

Lesquerella ludoviciana (Nutt.) Wats. (Brassicaceae): Rio Arriba County: Largo Canyon area. Un-named canyon by Roek Com #3 well site. South of Crow Canyon and north of Rockhouse Canyon. West side of Largo Wash. T25N, R6W, S28 NW/SE. 21 May 1995. Cyndie Holmes 160 (SJNM).

Lonicera tatarica L. (Caprifoliaeeae): San Juan County: Farmington. South Farmington Quad. Vine Ave. across from the softball fields. Along irrigation canal. T29N, R13W, S10 SW ¼. 5 May 1996. K. Heil 9460 (SJNM).

Stellaria crassifolia Ehrhart (Caryophyllaceae): McKinley County: Navajo Nation. Chuska Mountains; near Whiskey Lake, sandstone escarpment north of small pond to the south of Whiskey Lake. 35°58'14"N 108°49'06"W. 2708 m. 13 June 2000. S.L. O'Kane, K. Heil, & A. Clifford 4900 (SJNM).

Grayia spinosa (Hook.) Moq. in DC. (Chenopodiaceae): San Juan County: Ute Mountain Ute Indian Reservation. Along seismograph line MCE-25. Shadscale-sagebrush community. 12 April 1986. Rich Fleming 15 (SJNM).

Suaeda occidentalis (Wats.) Wats. (Chenopodiaceae): McKinley County; Navajo Nation; South Todilto Park; 4.25 miles southwest of Tsaya Lake - Bowl Canyon area; 1.0 mile northeast of Beelzebub Point; alluvial terrace south of confluence of Squirrel Springs wash and Bowl Canyon Creek drainage; alkali sacaton swale with sparse greasewood; alkaline silty clay to silty soils; 7320 ft.; July 06, 2001. Arnold Clifford 01-838 (SJNM).

Cucurbita pepo L. (Cueurbitaceae): San Juan County: B-Square Ranch. Small pond on the west-southwest side of Bolack Lake. Ca. 1/3 mile west of pond. T29N, R13W, S24 NW/SW. 20 August 1999. K. Heil 13767 (SJNM).

Astragalus calycosus Torr. ex Wats. var. ***calycosus*** (Fabaceae): San Juan County: Chaco Culture National Historic Park. Chacra Mesa. Scattered pinyon & juniper. Cliffhouse sandstone. 31 May 1993. T21N, R10W, S26. 6260 ft. Lisa Floyd-Hanna 7 (SJNM).

Astragalus cicer L. (Fabaceae): San Juan County: Navajo Nation: State Highway 371, ca 2 mi south of the Burnham turnoff. Roadside weed. 12 June 2000. 36°20'47"N 108° 14'51"W. 7371 ft. K. Heil, S.L. O'Kane, Jr. & A. Clifford 14796 (SJNM).

Lathyrus pauciflorus Fern. Var. ***utahensis*** (M.E. Jones) R. Davis (Fabaceae): McKinley County: Navajo Nation, County Road 19, ca. 4.5 air miles from Borrego Pass. Steep slopes and ledges of the Mancos Formation. 28 June 2000. 35°34'39"N 107°55'48"W. 2200 m. K. Heil & W. Mietty 14908 (SJNM).

Lupinus lepidus Dougl. var. ***utahensis*** (Wats.) C.L. Hitchc. (Fabaceae): San Juan County; Navajo Nation; Chuska Mountains; Toadlena Lake margin; 3.0 miles west of Toadlena community; bluegrass, sedge, spike rush, silverweed and other herbaceous forbs community; dark siltyclay to silty solis plus platy Chuska Sandstone fragments; T23N, R20W, Sec. 11; 9100 ft.; July 20, 2001. Arnold Clifford 01-865 (SJNM).

Swertia albomarginata (Wats.) Kuntze (Gentianaceae): San Juan County: Navajo Nation, Beclahbito area; ca. 2 miles north of Foutz Peak and 1.5 miles east of the Arizona State Line. Silty-clay soils on Dakota Sandstone. Pinyon-juniper Community. 9 June 1993. T31N, R21W, S25 SW ¼. Arnold Clifford 93-46 (SJNM).

Triglochin concinna Davy var. ***debilis*** (Jones) J.T. Howell (Juncaginaceae): San Juan County; Navajo Nation; Toadlena area. 1.5 miles south west of Two Grey Hills Trading Post; large alkaline seep south of Captain Tom Wash drainage; wide, moist ciegna with minor saturated channels; wire rush sedge, arrow grass, Parish's alkali grass community; 6000 ft. 04 June 2000. Arnold Clifford 00-383 (SJNM).

Linum subteres (Trel.) Winkler (Linaceae): San Juan County: Navajo Nation, ca. .5 mile north of the Chaco River along the Transwestern Gas Pipeline. Sand dunes; T34S, R22E, S27 SW ¼. 5700 feet; 11 October, 1997. K. Heil 11671 (SJNM).

Abronia nana S. Wats. var. ***harrisii*** Welsh (Nyctaginaceae): San Juan County: Navajo Nation, Toadlena area ca. 8 mi. NE of Toadlena School on dirt road leading to Sanostee. Ca. .5 mi west of the Tsin-nas-kid anticline. Clayey-gypsiferous soils of the Mancos Formation. T24N, R19W, S20 SW ¼. 5800 ft. 6 April 1995. Arnold Clifford 95-14 (SJNM).

Fraxinus pensylvanica Marshall (Oleaceae): San Juan County. Farmington; Riverine project area . Near the upper foot bridge along the Animas River in the Bird Hollow vicinity. Escape; T29N, R13W, S13 & 14; 5400 ft. 16 Sep 1996. K. Heil 10658 (SJNM).

Camissonia parvula (Nutt.) Raven (Onagraceae): San Juan County: Navajo Nation, Navajo Agricultural Products Incorp land. Desert Grassland Community; T27N, R4W, S15 NW ¼. 6180 ft. 29 April 1992. Rich Fleming 1160 (SJNM).

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Camissonia walkeri (A. Nels.) Raven (Onagraceae): San Juan County: Navajo Nation, ca. 1 mi. west of Red Wash and ca. 2 mi southwest of the San Juan River. Desert Scrub Community; Black Mancos Shale. T31N, R20W, S27. 23 May 1995. A. Clifford 95-240 (SJNM).

Epilobium palustre L. (Onagraceae): San Juan Co., Navajo Nation, ca. 4.5 miles west of Sanostee, un-named eanyon in the upper Chinle Formation, 7126 ft, N36°23'08" W109°01'21", 5 Sep 2002, K. Heil & A. Clifford 20556 (SJNM).

Oenothera caespitosa Nutt. var. ***caespitosa*** (Onagraceae): San Juan County: Farmington; B-Square Ranch. Along the road above Head Canyon. Scattered Utah juniper and desert scrub. T28N, R13W, S15 NE/SE. 6040 ft. 24 May 1999. K. Heil 12998 (SJNM).

Orobanche corymbosa (Rydb.) Ferris (Orobanchaceae): San Juan County: Navajo Nation, ca. .5 mi. southeast of Lake Valley Chapter House. Sandy soil; 6020 ft. 5 Sep 1982. K. Heil 1514 (SJNM).

Aliciella triodon (Eastw.) Brand (Polemoniaceae): San Juan County. Navajo Nation: Beclabito area. Ca. .5 mi south of Highway 504; first gray wash; along the south-facing slope. Slickrock type habitat with shallow, poorly developed soils, near the outcrop. Dakota sandstone. T30N, R20W. 21 May 1995. Arnold Clifford 95-213 (SJNM)

Gilia capitata Sims (Polemoniaceae): San Juan County: Farmington, Lions Wilderness Park. Ca .5 mi northeast of San Juan College. 5600 ft. Arkosic Sandstone (Ojo Alamo Formation). Pinyon Juniper Woodland Comm. T30N; R13W; S 36 NW1/4. 27 June 1992. Tina Sawyer 79 (SJNM).

Gilia opthalmoides Brand (Polemoniaceae): McKinley County: Navajo Nation, north of Crevasse Canyon on road to the Chuska Mountains. Large slab of sandstone with stunted trees. Rocky Mountain juniper, pinyon pine, and ponderosa pine. 35°51'37"N 108°53'49"W. 7400 ft. 16 May 2001. K. Heil & J.M. Porter 16097 (SJNM).

Ipomopsis aggregata (Pursh) Grant subsp. ***aggregata*** (Polemoniaeeae): San Juan County: Navajo Nation, 1 mile east of Road 7170 on road to Sanostee. South side of road. 36°19'48"N 108°59'14"W. 8532 ft. 8 August 2000. K. Heil & W. Mietty 15323 (SJNM).

Eriogonum clavellatum Small (Polygonaceae): San Juan County; Navajo Nation; Red Wash drainage valley; about 4.5 miles southeast of Beclahbito Chapter and 2.0 miles south of Red Wash bridge; plants growing in platy gravels, joint fractures and talus on minor eastward dipping cuesta ridges on exposed weathered early Upper Cretaeous lower member of Mancos Shale. A white to grayish-white shaley unit. Sparsely vegetated habitat with shadseale, mat saltbush and galleta; 5100 ft.; Sept. 21, 2002. Arnold Clifford 02-385 (SJNM).

Rosa manca Greene (Rosaceae): San Juan Co., Navajo Nation, ca. 4.5 miles west of Sanostee, un-named canyon in the upper Chinle Formation, 7145 ft, N36°23'12" W109°01'10", 5 Sep 2002, K. Heil & A. Clifford 20561 (SJNM).

Rosa multiflora Thunb. (Rosaceae): San Juan County: Farmington. Berg Park area, along the Animas River. Escape; T29N, R13W, S13 & 14. 5400 ft; 27 May 1996. K. Heil 9716 (SJNM).

Castilleja scabrida Eastw. (Scrophulariaceae): San Juan County: Navajo Nation, ca. 5 miles northeast of Toadlena. Ca. .25 mi south of windmill on Tsin-nas-kid Mesa. Slickrock of Dakota sandstone. T24N, R19W, S21 SW ¼. 2000 m. 29 April 1995. K. Heil & A. Clifford 8742 (SJNM).

Mimulus eastwoodiae Rydb. (Scrophulariaceae): San Juan County,Navajo Nation. Four wheel drive road between Beclabito and Oak Springs. Ca. 2 miles south of Beclabito where road crosses Cottonwood Canyon and ca .75 miles west. Collection along a tributary canyon northwest of road. Alcove in the Wingate Formation. Elev. 5822. N36 degrees 46' 22" W109 degrees 02' 32". 24 Sep 2002. K. Heil & A. Clifford 20900 (SJNM).

Penstemon barbatus (Cav.) Roth x ***P. comarrhenus*** A. Gray Scrophulariaceae): San Juan Co., Navajo Nation. Eastern slope of the Chuska Mountains on road west of Toadalena. Scattered ponderosa pine. 2325 m; N36 degrees 14'29" W108 degrees 55' 6" 28 June 2001. S. O'Kane, K. Heil, A. Clifford, & W. Mietty 5646 (SJNM).

Penstemon eatonii Gray subsp. ***eatonii*** (Scrophulariaceae): San Juan County: Navajo Nation, Beautiful Mountain northwest of Sanostee. West side of mountain. Lower pinyon-juniper community. Rocky and elay soils. S0676716E 4043299E. 6500 ft. K. Heil & A. Clifford 14546 (SJNM).

Penstemon pachyphyllus Gray ex Rydb. (Scrophulariaceae): San Juan County; Navajo Nation; Beclahbito Spring Wash drainage; 0.25 mile east of Beclahbito Day School; Growing along the side banks on rocky alluvial deposited boulders; Juniper with big sagebrush, cliffrose, hoary goldenaster, saltcedar and galleta; 5690 ft.; May 18, 1994. Arnold Clifford 94-10 (SJNM).

Penstemon rostriflorus Kellogg (Scrophulariaceae): San Juan County: Navajo Indian Reservation, T30N, R21W, Beclahbito area; found ca 150 ft. west of water trough and just south of the Day School. On the foot slopes of the southern wash wall; on talus. Salt Wash member of the Morrison Formation. Juniper and pseudo-riparian community. 23 June 1993. A. Clifford #93-65 (SJNM).

Solanum dulcamara L. (Solanaceae): San Juan County: Farmington; B-Square Ranch. Collected along irrigation ditch ca. ¼ mile north of the San Juan River and ca. 1 mile west of the old Animas Bridge. 36°42'27"N 108°11'36"W. 28 Sep 1999. K. Heil 14342 (SJNM).

Viola rydbergii Greene (Violaceae): Rio Arriba County: Salso Gomez Ranch. Chromo Mountain, ca. ¼ mi from ranch house on the north side of the mountain. Aspen and white-fir. 36°58'24"N 106°44'26"W. 8565 ft. 9 Sep 2000. K. Heil & W. Mietty 15644 (SJNM).

Bernardia (Euphorbiaceae) in New Mexico

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There are two euphorbiaceous shrubs in New Mexico: *Croton fruticulosus*, with large leaves (3-7 cm long) densely covered with stellate hairs and with entire to obscurely toothed margins, and a species of *Bernardia*, with smaller leaves (1-2 cm long) sparsely stellate pubescent and with prominently or coarsely toothed margins. It is the identity of the latter species that attracts our attention here.

All works that comment in some way on *Bernardia* in New Mexico (Carter 1997; Correll & Johnston 1970; Henrickson & Johnston 1997; Kartesz 1999; Martin & Hutchins 1981; Powell 1988; Tidestrom & Kittell 1941; Vines 1960; Wooton & Standley 1915) agree that there is but a single species of *Bernardia* in New Mexico, but do not agree on the identity of this plant. Some apply the name *B. myricifolia* (Scheele) Bentham & Hooker to our plants, others use *B. obovata* I.M. Johnston.

The two species in question can be distinguished by the following features:

Bernardia myricifolia: Leaves elliptic to oblong, prominently reticulate-veined and densely stellate-hairy beneath with some hairs about 0.4-0.5 mm long, 1-5 cm long. Stamens 10-16. Fruit mostly 3-loculed, 3-seeded.

Bernardia obovata: Leaves ± obovate, not prominently reticulate-veined, only sparsely stellate-hairy beneath with most hairs 0.2-0.3 mm long, 1-2 cm long. Stamens 3-7. Fruit 2-loculed, usually 2-seeded or 1-seeded by abortion.

I examined all *Bernardia* from the state's major herbaria (NMC, NMCR, and UNM, a total of 13 specimens; there were no New Mexico *Bernardia* at SJNM or WNM). All specimens clearly belonged to a single species and fit the description of *Bernardia obovata* as given above. This conclusion agrees with previous determinations by David Bleakly and Barron Rector, who examined the UNM specimens in 1993 and 1974, respectively.

Bernardia obovata is known in New Mexico only from Doña Ana County (San Andres and Robledo Mountains) and Eddy County (Guadalupe Mountains). In Doña Ana County, nearly all the collections are from Ash Canyon and Ropes Spring in the San Andres Mountains, commonly visited sites for the last 100 years or more. Plants are found on rocky limestone slopes at elevations of about 3800-6000 feet in the foothills of our southern mountains.

Bernardia myricifolia is found in central- and south-Texas, and south into northeastern Mexico.

Acknowledgements

Many thanks to the curators and staffs of NMC, NMCR, SJNM, UNM, and WNM, who allowed me to study their specimens.

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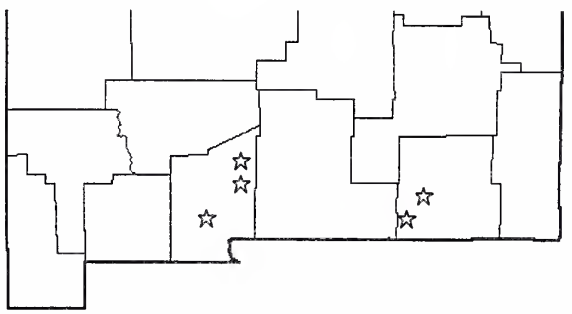
Eddy County: Guadalupe Mts, along hwy 137, 7 miles west of junction with hwy 285, Shafer Canyon, 3800 ft, 6 Jul 1982, K.W. Allred 2217 (NMCR); Queen, 5900 ft, 2 Aug 1909, [no collector] (NMC).



Botany is the natural science that transmits the knowledge of plants.

— Linnaeus

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What's In A Name?

Botany from A to Z: Can you name a genus of plants found in New Mexico for every letter of the alphabet? The list begins with *Abies* and ends with *Zygophyllum*. The letter with the most names seems to be C, with 120 genera (or thereabouts) beginning with this letter. The fewest are Q and Y, represented by *Quercus* and *Quincula, Yabea* and *Yucca*. The shortest names are *Iva, Poa,* and *Zea*. The longest name is *Krascheninnikovia*, which might also be the hardest to spell. What does all this mean? Simply that someone has too much time on his hands and we're in desparate need for some of you to contribute articles or material to this newsletter!

Notices

- Botany 2003: 27-31 July, Mobile, Alabama
- Botany 2004: 1-5 August, Snowbird, Utah

Looking Back in the Month of — October

- Oct 1-10, 1900: First International Botanical Congress held in Paris.
- Oct 2, 1836: Darwin returns to England after spending 5 years aboard the Beagle.
- Oct 15, 1998: Julian Steyermark (Flora of Missouri) dies at age 79; listed by Guiness Book of Records as the champion plant collector.

[from "An Almanac of Botanical Trivia" by R.A. Howard]

Plant Distribution Reports

New records and significant distribution reports for New Mexico plants should be documented by complete collection information and disposition of a specimen (herbarium). Exotic taxa are indicated by an asterisk (*).

— Bob Sivinski [P.O. Box 1948, Santa Fe, NM 87504]

Rotala ramosior (Linnaeus) Koehne (Lythraceae): Hidalgo County, Peloncillo Mountains, T31S R21W Sec 31 SE/4, 5,600 ft, around drying margin of intermittent pond, 9 Sep 1983, W.H. Moir s.n. (UNM).

— Jim McGrath [20 Robin Court, Edgewood, NM 87015-7908]

Carex illota L.H. Bailey (Cyperaceae): Taos County, Latir Lakes, from seep adjacent to the outflow stream below the uppermost lake, at timberline, 11,900 ft, 13 Aug 2001, J. McGrath 350 (MICH, UNM). [det. A. Reznicek]

Lindernia dubia (Linnaeus) Pennell var. ***dubia*** (Scrophulariaceae): Rio Arriba Co., on a gravel bar in Rio Grande 1-2 mi NE of Velarde, See 34 T23N R9E, UTM: 0411875E 4004972N, 1800 m (5900 ft), growing w/ Eleocharis, Sagittaria, Gnaphalium palustre, and Veroniea anagallis-aquatiea, 18 June 2002, J. McGrath 385 (UNM). [det. T. Lowrey]

— Robert D. Dorn [see Dorn 2002, Bot. Lit. Interest]

Salix wolfii Bebb var. ***wolfii*** (Salicaceae): Rio Arriba County, meadow along Osier Creek ca. 1.2 km southwest of confluence with Rio de los Piños, 2925 m, 36°59.6'N 106°20.6'W, 5 July 2001, Dorn 8847 (MO, NMC, RM, UNM).

— Kelly W. Allred [MSC Box 3-I, New Mexieo State University, Las Cruces, NM 88003]

Chamaesyce hirta (Linnaeus) Millspaugh (Euphorbiaceae): Hidalgo County, Peloncillo Mts, Guadalupe Canyon, T34S R22W Sec 14, in moist shaded spots along creek, with *Platanus, Fraxinus*, 5000 ft, 29 Aug 1986, K.W. Allred 4275 (NMC). [det. V. Steinmann]

Talinum parvulum Rose & Standley (Portulacaeeae): Hidalgo County, Peloncillo Mts, Coronado National Forest, vicinity of Maverick Spring along Cloverdale Creek, T33S R2W Sec 6, with *Platanus, Juniperus, Toxicodendron*, 17 Jul 1991, K.W. Allred 5568 (NMCR).

— Richard Spellenberg [see Spellenberg 2002, Bot. Lit. Interest]

Boerhavia spicata Choisy var. ***palmeri*** (S. Watson) Spellenberg (Nyctaginaceae): Doña Ana Co., mesa west of Organ Mts, 4000 ft, 5 Oet 1907, E.O. Wooton & P.C. Standley (LL, TEX, US).

— Jonathan Coop [Department of Botany, University of Wiseonsin - Madison, Birge Hall 430 Lincoln Dr., Madison, WI 53706]

Carex phaeocephala Piper (Cyperaeeae): Colfax County, Carson National Forest, Valle Vidal Unit, east slope of Little Costilla Peak, N 36°49.590' W 105°13.341', lower alpine slopes, associated with *Festuca thurberi, Juncus drummondii, Carex ebenea,* 12108 ft, 3 Aug 2002, J.D. Coop 637, 639 (WIS).

Sphagnum fimbriatum Wils. (Sphagnaceae): Sandoval Co., Valles Caldera National Preserve, Alamo Bog, N35°54.879' W106°38.220', open wetland fed by cold aeidic springs associated with sulfuric fumaroles, associated species of vascular plants include *Betula glandulosa*, *Carex aquatilis, C. canescens, C. utriculata*, *Deschampsia caespitosa*, *Picea pungens*, 8700 ft, 18 July 2002, J.D. Coop 585 (WIS). [det. J. Shaw]

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A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University.

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A Taxonomic Review of the Tendril-bearing Legumes (Leguminosae) in New Mexico: I. *Lathyrus*

Susannah Johnson & Kelly W. Allred

Range Science Herbarium, New Mexico State University, Las Cruces, NM 88003

Introduction

Tendril-producing plants are relatively uncommon in the New Mexico flora. The obvious examples of grapes (*Vitis*) and cucurbits (Cucurbitaceae) come to mind. The less well-known passion-flowers (*Passiflora*) also produce tendrils, but from modified inflorescences. Members of the Leguminosae (Fabaceae) have the tendency to modify their leaf parts into tendrils as well, and this is expressed in two New Mexico genera, *Lathyrus* and *Vicia*.

Our initial goal was to be able to identify the various species independent of genus using leaf and herbage features, without having to dissect the flowers and examine the stigmas, since everyone easily recognizes the group by the tendrils. This proved impossible, however, and we have resorted to the somewhat obscure but traditional features of the style and stigma to first distinguish the two genera. Indeed, this seems the only features that consistently delimits the genera (Isely 1998). Within each genus, the more easily observed features of leaf, tendril, and stem may be utilized with more success.

We present here the first of these genera, *Lathyrus*. The *Vicia* of New Mexico will be presented in part II.

We have not undertaken to monograph the genus, only to provide keys, descriptions, and geographic information for New Mexico plants. Synonymy is generally taken from other pertinent monographs or revisions. Types were not consulted, except as they may have been available on the internet (such as the on-line type collection at NY).

No new combinations or taxonomic novelties are proposed herein.

1 Style hairy on all sides in a tuft or ring at the apex; wings of corolla adherent to the keel..... ***Vicia***
1 Style hairy above the middle only on one side, glabrous on the other; wings of corolla essentially free from the keel ..... ***Lathyrus***

Lathyrus Linnaeus sweet-pea

Annual or perennial herbs from taproots or rhizome-like caudex, glabrous or with basifixed hairs. Leaves pinnately compound, the terminal leaflet modified into a tendril, this simple or branched, prehensile or not or reduced to a short bristle; stipules clasping or sagittate, usually toothed. Inflorescence an axillary raceme, with 1-numerous flowers. Flowers perfect. Calyx of united sepals forming a tube, mostly 10-nerved, pubescent or glabrous, the lobed (teeth) equal or unequal. Corolla papilionaceous, with banner (standard), wings, and keel, the 2 wing petals essentially free from the keel. Stamens 9+1. Style compressed toward the tip, pubescent on one side on the distal 1/3 or so. Fruit a legume, sessile or stipitate, the valves dehiscent and coiling.

The classic work for North American *Lathyrus* is C. Leo Hitchcock's "A Revision of the North American Species of *Lathyrus*" (Univ. Washington Publ. Biol. 15:1-104. 1952.). Additional references useful in this review, mostly of a floristic nature, were Barneby (1989), Great Plains Flora Association (1986), Isely (1998), Martin & Hutchins (1981), Tidestrom & Kittell (1941), Welsh et al. (1993), and Wooton & Standley (1915).

Just about every worker who has faced this group has attempted to revise, reclassify, reorder, or realign in some fashion. This is almost inevitable, since the variation is multi-faceted and at least partly overlapping, if not continuous, in several different dimensions. This is especially true of the mostly white-flowered taxa, *Lathyrus arizonicus*, *L. graminifolius*, *L. laetivirens*, *L. lanzwertii*, and *L. leucan-*

(Continued on page 2, Lathyrus)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(Lathyrus, Continued from page 1)

thus. We agree with Barneby's (1989, p. 207) assessment: "A settled taxonomy for the complex series of small-flowered mountain vetchlings described above will remain unattainable unless differential characters more reliable than those presently known can be found and quantified. While the flowers and pods remain essentially identical in form and proportions, the pubescence (especially of calyx), number and outline of leaflets (sometimes both at once), development of tendrils, and size and color of petals are subject to much variation, partly correlated with dispersal and partly individual or erratic." Rather than try to solve this dilemma (an almost irresistible temptation), we are content with noting the various morphological phases that one encounters in New Mexico plants and applying appropriate names to them. Without ignoring the obvious similarities and possible relationships, we have avoided placing the taxa named above into any hierarchical scheme, but recognize each at the species level, thinking this will allow field botanists to more easily deal with the names and populations they encounter and relate them to other works. With a perspective limited to New Mexico plants, we find our populations relatively easy to identify, with less uncertainty than might be found with a broader geographic view.

Lathyrus parvifolius S. Watson was reported by Wooton & Standley (1915), but this is a species of central and southern Mexico and not found in New Mexico (Hitchcock 1952). The specimen in question (from "Carrizo Mountains") has not been located. Given the small leaflets (1-2 cm), perhaps it was a misidentified *Vicia*.

Lathyrus pauciflorus var. *utahensis* (q.v.) was reported by Heil et al. (2002); the specimen identification has been corrected to *L. eucosmus*.

We have included in the key (not in bold) and in the text taxa that have been questionably reported from New Mexico, with the view that this will aid in identification of future collections.

1 Stems winged; all leaves with only 2 leaflets
  2 Flowers small, 1-1.5 cm long; fruits hirsute with pustule-based hairs.....***L. hirsutus***
  2 Flowers large, 1.5-3 cm long; fruits glabrous
    3 Plants perennial; flowers 4-15 (sometimes as few as 2) in number.....***L. latifolius***
    3 Plants annual; flowers 1-2 (sometimes 3) in number .....*L. tingitanus*
1 Stems not winged; leaves, at least some, with more than 2 leaflets
  4 Flowers white or yellowish, small, 1-2 cm long
    5 Tendrils absent or very short and bristle-like, less than 6 mm long if present, the plants usually erect and free-standing
      6 Leaflets narrowly elliptic to linear, at least 7 times longer than wide, mostly 2-4 in number .....***L. arizonicus***
      6 Leaflets elliptic to oblong, 2.5-6 times longer than wide, mostly 4-8 in number..... ***L. leucanthus***
    5 Tendrils present, usually well developed and prehensile, at least longer than 6 mm, the plants often clambering on or attached to others
      7 Leaflets narrowly linear, mostly 15 or more times longer than wide.....***L. graminifolius***
      7 Leaflets much broader than above, 1-6 times longer than wide
        8 Leaflets broadly ovate or broadly elliptic, mostly 1-2 times longer than wide; flowers large, 15-22 mm long.. .....*L. laetivirens*
        8 Leaflets narrower, elliptic to lanceolate to oblong, 2.5-6 times longer than wide; flowers small, 9-16 mm long
          9 Leaflets 6-10 in number, somewhat coriaceous and prominently veined; tendrils mostly branched..... .....*L. lanzwertii* var. *pallescens*
          9 Leaflets 4-6 in number, thin and membranous and somewhat vaguely veined; tendrils mostly simple..... ..... ***L. leucanthus***
  4 Flowers bluish, lavender, pinkish, or purplish, small to large, 1.2-3 cm long
    10 Tendrils absent or very short and bristle-like; leaflets short silky-hairy .....***L. polymorphus*** subsp. ***incanus***
    10 Tendrils present, often well developed, sometimes reduced but at least 6 mm or more long; leaflets glabrous or only sparsely and minutely pubescent (or densely pubescent in *L. venosus* var. *intonsus*, with well-developed tendrils)
      11 Stipules 2-3 cm long, foliaceous and toothed (at least those subtending the peduncles); keel 2-3 mm shorter than the wings.....*L. pauciflorus* var. *utahensis*
      11 Stipules 0.5-1.5 cm long, not foliaceous nor toothed; keel about equal to the wings
        12 Leaflets 10-12 in number (occasionally fewer); racemes with 8-15 (or more) flowers..... ..... ***L. venosus*** var. ***intonsus***
        12 Leaflets 4-10 in number; racemes with 2-5 flowers
          13 Flowers small, 12-16 mm long, pale lavender to pinkish violet.....*L. lanzwertii* var. *lanzwertii*
          13 Flowers larger, 20-30 mm long, pinkish, purplish, to bluish
            14 Calyx 5-8 mm long; fruit sessile; leaflets mostly 1.5-3 cm long and 2-5 mm wide (sometimes wider); Four Corners region..... ..... ***L. brachycalyx*** var. ***zionis***
            14 Calyx 8-12 mm long; fruit stipitate; leaflets 2.5-6 cm long and 5-10 mm wide; widespread ..... ***L. eucosmus***

Lathyrus arizonicus Britton ARIZONA SWEET-PEA.

Plants perennial. Stems erect, 10-40 cm tall, wingless, glabrous to sparsely and obscurely pubescent. Leaflets mostly 4, sometimes as much as 6 or as few as 2, 20-70 mm long, 2-5.5 mm wide, linear to narrowly elliptic, at least 7 times longer than wide, the herbage glabrous or very sparsely pubescent. Tendrils absent to bristle-like, not more than 6 mm long when present, not prehensile. Racemes 2– to 5-flowered, mostly shorter than the leaves. Flowers whitish, aging to tan or yellowish, 10-14 mm long. Pods 3-6 cm long, 4-7 mm wide.

Distribution in New Mexico: Widespread in the mountains and upper foothills throughout the state.

Lathyrus arizonicus is characterized herein by short, erect stems, quite narrow leaflets, absence of tendrils, and small white flowers, conforming to the type (NY). As thus defined, it is quite distinct from the narrow-leafleted *L. graminifolius* (which has numerous leaflets and prehensile tendrils) and reasonably distinguished from *L. leucanthus* (which may lack tendrils but has broader leaflets, less than 6 times longer than wide). Other treatments have applied a wider circumscription to *L. arizonicus* or *L. leucanthus*, applying either of these names to any small-flowered form that also lacked tendrils. Many plants formerly identified as *L. arizonicus* we now treat in *L. leucanthus* (q.v.).

Lathyrus brachycalyx Rydberg var. ***zionis*** (C.L. Hitchcock) Welsh ZION'S SWEET-PEA.

Plants perennial. Stems usually clambering or sometimes erect, 24-50 cm long, wingless, glabrous. Leaflets 6-8 in number (ours), 1.5-3.5 cm long, 2-5 (10) mm wide, linear to elliptic or lance-elliptic, the herbage glabrous to sparsely villous-pubescent. Tendrils well-developed, often branched, prehensile. Racemes 2– to 5-flowered, mostly exceeding the leaves. Flowers pinkish to bluish, fading to

(Continued on page 3, Lathyrus

(*Lathyrus, Continued from page 2*)
bluish violet, 17-25 mm long, the banner prominently cordate apically. Pods 3-5 cm long, 5-8 mm wide, sessile.

Distribution in New Mexico: Juniper woodland slopes and flats in the northwestern region.

Known only from San Juan and Rio Arriba counties in New Mexico, *Lathyrus brachycalyx* var. *zionis* is characterized by small, narrow leaflets with well-developed tendrils, large, bluish flowers with a deeply notched banner and short calyx, and sessile pods. It is mostly confused with *L. eucosmus*, which differs in having larger leaflets, longer calyx, and stipitate pods.

We follow Welsh et al. (1993) in recognizing *zionis* at the varietal level within *Lathyrus brachycalyx*, which also has a short calyx.

Lathyrus eucosmus Butters & St. John BUSH SWEET-PEA [*Lathyrus decaphyllus* Pursh].

Plants perennial. Stems erect to ascending and weakly clambering, 20-60 cm tall, wingless, glabrous to sparsely and obscurely pubescent. Leaflets mostly 6-8, 2.5-6 cm long, 5-10 mm wide, linear to narrowly elliptic, prominently veined, the herbage sparsely pubescent to glabrous. Tendrils well-developed and prehensile on the upper leaves to short and bristle-like on the lower. Racemes 2– to 5-flowered, equaling or longer than the leaves. Flowers rose-colored to purplish, 2-3 cm long. Pods 3-7 cm long, 9-10 mm wide.

Distribution in New Mexico: Very widespread across the northern tier of counties, and southward in the central mountains.

This species was long known in New Mexico as *Lathyrus decaphyllus* Pursh, the name being published in 1814. That epithet is predated by *L. decaphyllus* Hooker, however, from 1803.

This species is sometimes confused with the similar *Lathyrus polymorphus* var. *incanus* of the Great Plains region, which lacks tendrils on all leaves and has prominently pubescent foliage.

Lathyrus graminifolius (S. Watson) White GRASS-LEAF SWEET-PEA [*Lathyrus palustris* Linnaeus var. *graminifolius* S. Watson].

Plants perennial. Stems erect or clambering, 20-60 cm long, wingless. Leaflets mostly 6-8 in number, 4-12 cm long, 1-5 mm wide, linear, at least 14 times longer than wide, the herbage glabrous or very sparsely pubescent. Tendrils well-developed and prehensile. Racemes 3– to 10-flowered, sometimes more, mostly exceeding the leaves. Flowers whitish or cream to pale lavender, 12-16 mm long. Pods 3-5 cm long, 4-7 mm wide.

Distribution in New Mexico: Widespread in the western mountains, with a few collections from the Sangre de Cristo and Sacramento mountains.

This species is well-marked and easily recognized by the large plants, many long narrow leaflets, and well-developed tendrils, as witnessed by the nearly complete absence of misidentifications in herbaria. Hitchcock (1952) proposed hybridization and subsequent intergradation where it occurs with *L. arizonicus*, but all the specimens we looked at were easy to assign to one or the other.

Lathyrus hirsutus Linnaeus SINGLETARY SWEET-PEA.

Plants annual. Stems usually clambering, 20-100 cm long, narrowly to broadly winged. Leaflets 2 in number, 3-8 cm long, 2-5 mm wide, linear-lanceolate, the herbage sparingly hirsute to glabrate. Tendrils well-developed and prehensile. Racemes 1– to 2(3)-flowered, mostly exceeding the leaves. Flowers red to bluish, 9-14 mm long. Pods 2.5-4 cm long, 5-8 mm wide.

Distribution in New Mexico: Native to Europe and sporadically established in disturbed and ruderal sites; currently known from a few northern counties (fide Isely 1998).

Singletary pea is sometimes planted for spring pasture or hay. Continued use, however, results in the neurotoxic disease, lathyrism.

Though not reported for New Mexico, common sweet-pea, *Lathyrus odoratus*, is another annual pea with 2 leaflets, winged stems, and hairy pods. Profusely used in the floral industry and flower garden, it may easily escape and be found in moist waste places in the northern regions. It has larger flowers (2.5-3 cm long) than *L. hirsutus*.

Lathyrus laetivirens Greene ex Rydberg ASPEN SWEET-PEA [*Lathyrus lanzwertii* Kellogg var. *laetivirens* (Greene ex Rydberg) Welsh, *Lathyrus leucanthus* Rydberg var. *laetivirens* (Greene ex Rydberg) C.L Hitchcock].

Plants perennial. Stems erect to trailing or clambering, 20-70 cm long, wingless. Leaflets 6-10 in number, 2-4 cm long, 1-2 cm wide, thin, the veins obscure, broadly ovate to broadly elliptic, 1-2 times longer than wide, the herbage glabrous. Tendrils well-developed and prehensile. Racemes 2– to 5-flowered, shorter than or equaling the leaves. Flowers white with pinkish veins, 15-22 mm long. Pods 3-6 cm long, 4-7 mm wide.

Distribution in New Mexico: Not known from the state.

As defined here, and in accordance with the type (NY!), this is a rather well-marked taxon with thin, broadly ovate leaflets, well-developed tendrils, and large white flowers. Plants corresponding to this circumscription have not been seen from New Mexico. In our opinion, it is sufficiently distinct not to be submerged within a large and unwieldy *Lathyrus lanzwertii*, as did Isely (1998).

Lathyrus lanzwertii Kellogg NEVADA SWEET-PEA.

Plants perennial. Stems trailing to clambering, 20-80 cm long, wingless. Leaflets 6-10 in number, 3-8 cm long, 3-10 mm wide, somewhat coriaceous, the veins prominent, linear to elliptic, the herbage sparingly pubescent to glabrous. Tendrils well-developed, prehensile, and usually branched. Racemes 2– to 8-flowered, shorter to exceeding the leaves. Flowers white to pink-purple, 12-16 mm long. Pods 4-6 cm long, 3-6 mm wide.

This taxon seems to be at the heart of the confusion in the small-flowered *Lathyrus*. Indeed, Barneby (1989) placed *arizonicus*, *lanzwertii*, *leucanthus*, and *pallescens* all together within *L. lanzwertii*, distinguishing some of them as varieties. Isely (1998) followed a similar pattern, but admitting *laetivirens* as a recognized variety. While such a course may have an appeal, in view of the lack of sharply marked taxa over large areas, it seems unnecessary and cumbersome for our New Mexico plants, and does not match the patterns of variation that we see here. Thus, we apply the name *lanzwertii* in a much more limited sense than those authors. As such, we find it to be absent from New Mexico. However, two entities that are unaccounted for elsewhere in this treatment have been reported for the state:

a Petals pink-purple..... var. *lanzwertii*
a Petals white, the banner sometimes pink-veined..... var. *pallescens*

Lathyrus lanzwertii Kellogg var. *lanzwertii*

We have seen no specimens of this taxon in any New Mexico herbaria, though Isely (1998) plotted a single specimen (corresponding to his view of the species) in western Cibola County, adjacent to the state line. This is a taxon of mostly the Pacific Northwest, California (Sierra Nevada), and central Utah. We consider it to be absent from New Mexico, as we apply the name.

Lathyrus lanzwertii Kellogg var. *pallescens* Barneby

Barneby (1989) erected this name to account for white-flowered forms of *Lathyrus lanzwertii* in the southeastern portions of its distribution. In accordance with Barneby's type (NY!), we view it as a taxon of numerous, sharply elliptic, and prominently veined leaflets with well-developed (usually branched) tendrils, and absent from New Mexico. We do not use var. *pallescens* to include what we rec-

(*Continued on page 4, Lathyrus*)

(Lathyrus, continued from page 3)
New Mexico with fewer, often blunt, obscurely veined leaflets (though this is variable), and weakly developed or absent tendrils, more allied to *L. arizonicus* than to *L. lanzwertii*.

Lathryus latifolius Linnaeus EVERLASTING-PEA.

Plants perennial, many-stemmed. Stems mostly clambering or climbing by its tendrils, 60-100 cm long or more, prominently winged, as are the petioles. Stipules prominent, 3-5 cm long. Leaflets 2 in number, 5-10 cm long or more, ± 1-3 cm wide, thin, the veins prominent, lanceolate-elliptic, the herbage glabrous or nearly so. Tendrils well-developed, branched, prehensile. Racemes 5– to 15-flowered, exceeding than the leaves. Flowers pinkish red to purplish or white, 18-25 mm long. Pods 6-10 cm long, 7-10 mm wide.

Distribution in New Mexico: Cultivated as a garden ornamental, occasionally escaping and persisting; currently known from several rather scattered locales, and suspected to be found elsewhere as well. Native to Europe.

Everlasting-pea is easily recognized by the winged stems and petioles, a single pair of leaflets, and large flowers. It is a strong perennial, persisting from deep-seated roots. The only other New Mexico *Lathyrus* with winged stems are *L. hirsutus* and *L. tingitanus,* amply distinguished in the key.

Lathyrus leucanthus Rydberg ROCKY MOUNTAIN SWEET-PEA [*Lathyrus lanzwertii* Kellogg var. *leucanthus* (Rydberg) Dorn].

Plants perennial. Stems erect or scandent, 15-40 cm long, wingless. Leaflets mostly 4-6(8) in number, at least at mid-stem, 2-4.5 cm long, 4-12 mm wide, thin, the veins usually not prominent, elliptic to lanceolate or sometimes oblanceolate, 2.5-6 times longer than wide, the herbage glabrous or very sparsely pubescent. Tendrils absent to developed, but rarely branched, prehensile or not. Racemes 2– to 5-flowered, mostly shorter than the leaves. Flowers whitish, 9-15 mm long. Pods 3-6 cm long, 4-7 mm wide.

Distribution in New Mexico: Very common and widespread in the mountains and foothills throughout the state.

Because we have used the name *Lathyrus arizonicus* (q.v.) in a more narrow sense than other workers, *L. leucanthus* now includes some plants previously referred to the *L. arizonicus.* We apply the epithet *leucanthus* to plants with few, thin leaflets with obscure veins and absent or weakly developed tendrils and with small white flowers. The thin leaflets are intermediate in shape between *L. arizonicus* and *L. lanzwertii*; not as narrow as the former and not as broad, sharply pointed, or as prominently veined as the latter.

Plants lacking tendrils tend to be shorter, more erect, and with fewer leaflets than those with prehensile, though not branched, tendrils.

Lathyrus pauciflorus Fernald var. *utahensis* (M.E. Jones) Piper ex M.E. Peck FEW-FLOWERED SWEET-PEA [*Lathyrus utahensis* M.E. Jones].

Plants perennial. Stems erect, 20-60 cm long, strongly angled but not winged. Stipules well-developed, 2-3 cm long, at least those subtending the peduncles. Leaflets mostly 5-11 in number, 3-6 cm long, 1-2.5 cm wide, ovate to ovate-lanceolate, the herbage glabrous or very sparsely pubescent. Tendrils well-developed, prehensile and usually branched. Racemes 4– to 7-flowered, usually considerably longer than the leaves. Flowers pink-purple, fading bluish, 18-25 mm long. Pods 3-5 cm long, 3-6 mm wide.

Distribution in New Mexico: Though recently reported from New Mexico (Heil et al. 2002), the specimen in question (Heil & Mietty 14908, SJNM) is *Lathyrus eucosmus*, and *L. pauciflorus* remains unknown from the state.

Few-flowered sweet-pea will be recognized by having well-developed tendrils, large purplish flowers, and large foliaceous and toothed stipules. It occurs in southwestern Colorado adjacent to the state line, and may be found in New Mexico in the future.

Lathyrus polymorphus Nuttall var. ***incanus*** (Smyth & Rydberg) Dorn HOARY SWEET-PEA [*Lathyrus incanus* (Smyth & Rydberg) Rydberg, *Lathyrus ornatus* Nuttall var. *incanus* Smyth & Rydberg, *Lathyrus polymorphus* Nuttall subsp. *incanus* (Smyth & Rydberg) C.L. Hitchcock, *Lathyrus polymorphus* Nuttall var. *incanus* (Smyth & Rydberg) Isely ined.].

Plants perennial. Stems erect, 15-25 cm tall (our material), not winged. Leaflets mostly 6-10 in number, (1.5)2-3(4) cm long, 2-4 mm wide, narrowly elliptic, prominently veined, the herbage villous-hirsute. Tendrils absent or present as short bristles. Racemes 2– to 6-flowered, usually equaling than the leaves. Flowers purplish or whitish, 2-3 cm long. Pods glabrous, 2-6 cm long, 5-10 mm wide.

Distribution in New Mexico: Currently known only from a single specimen at UNM: 5 miles southeast of Encino on hwy 285, in Torrance County. It could be looked for also in the northeastern plains.

This is a species of the central plains, easily recognized by its short stature and large flowers resting among the foliage. Our variety is characterized by puberulent herbage.

Lathyrus tingitanus Linnaeus TANGIER SWEET-PEA.

Plants annual. Stems scandent or scrambling, 40-150 cm long or more, winged. Leaflets 2 in number, 2-6 cm long, 1-5 cm wide, lanceolate to widely ovate. Tendrils well-developed, prehensile and branched. Racemes 1– to 3-flowered. Flowers purple to crimson, 2.5-3 cm long. Pods glabrous, 6-12 cm long, 8-11 mm wide.

Distribution in New Mexico: Socorro County; known only from a forage-trial planting at the Bosque del Apache in 1957. It has not persisted there and has never been known outside of cultivation, and cannot realistically be considered a part of the wild flora of New Mexico.

A native of Europe, Tangier sweet-pea has been introduced in California and Oregon and is occasional in other western states.

Lathyrus venosus Muhlenberg ex Willdenow var. ***intonsus*** Butters & St. John VEINY SWEET-PEA [*Lathyrus oreophilus* Wooton & Standley].

Plants perennial. Stems erect, 40-100 cm long, not winged. Leaflets mostly 10-12 in number (sometimes fewer), 3-6 cm long, 1-3 cm wide, broadly elliptic, the veins prominent, the leaves densely puberulent (sometimes sparsely so). Tendrils well-developed, prehensile but unbranched. Racemes 8– to 15-flowered, usually shorter than the leaves. Flowers bluish or purplish, 14-20 mm long. Pods glabrous or hairy, 4-6 cm long, 5-8 mm wide.

Distribution in New Mexico: Sacramento Mountains, Otero and Lincoln counties.

There are only three records for this species in New Mexico, all from the Sacramento Mountains. The earliest is a collection by E.O. Wooton in 1899 from James Canyon, and the type for *Lathyrus oreophilus* Wooton & Standley (not seen); the second is from the Mescalero Indian Reservation in 1936 (UNM!); and the third is from Ruidoso Creek in 1949 (UNM!). It is possible that these represent early introductions of veiny sweet-pea, perhaps escaping from hay or forage, that

(Continued on page 5, Lathyrus)

Botany is the natural science that transmits the knowledge of plants.

— Linnaeus

(Lathyrus, Continued from page 4)

have failed to persist. This is a species of eastern United States and Canada, west to eastern North Dakota and eastern Texas, with this isolated occurrence westward in New Mexico. It is not reported from Colorado or Wyoming.

Isely (1998) chose not to recognize any intraspecific variation within *L. venosus*, but since the three collections mentioned above are uniformly pubescent, we assign the varietal name *intonsus*, as used by Hitchcock (1952).

Acknowledgments

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Appendix: Specimens Examined

Lathyrus arizonicus

Catron Co.: near Sawmill Peak, 01-Jun-82, Knight, P. 2075 (UNM). Cibola Co.: Mt. Taylor, 20-Jun-98, Ivey, R.D. s.n. (UNM). Dona Ana Co.: Organ Mts, Van Patten's, 10-Sep-1899, Wooton, E.O. s.n. (NMC). Hidalgo Co.: Animas mts, 20-May-75, Wagner, W. 758 (UNM). Lincoln Co.: Capitan Mts, 17-May-90, Sivinski, R. 1416 (UNM); 3 mi w Alto, 29-May-97, Heil, K. 10959 (UNM); Eagle Creek, 22-May-76, Hutchins, R. 5625 (UNM); White Mts, 16-May-36, Castetter 10664 (UNM); White Mts, Eagle Creek, 22-Jul-1899, Turner 160 (NMC); 3 mi w of Alto, 8300 ft, 29-May-97, Heil, K. 10959 (SJNM). Los Alamos Co.: Water Canyon, 01-Jun-78, Foxx 9 (UNM). Otero Co.: Sacramento Mts, La Luz Canyon, Lincoln National Forest, at jct with road to Bailey Canyon, mixed confer forest with ponderosa, douglas fir, aspen, 8500 ft, 23-May-02, Kelly W. Allred 8230 (NMCR); Sacramento Mts. La Luz Canyon, meadow area at junction with Bailey Canyon road, mixed conifer vegetation; N32d59.755' W105d44.740', sunny open spots, 8385 ft, 31-May-01, Allred, Kelly W 8035 (NMCR); Sierra Blanca, 18-Jun-49, Clausen, R.T. 7808 (UNM); Cloudcroft, 19-Aug-1899, Wooton, E.O. s.n. (NMC); 7 mi se Cloudcroft, 20-May-81, Hutchins, R. 9559 (UNM). Rio Arriba Co.: Naciemento Peak, 13-Jun-64, Fleck, A s.n. (UNM); Hopewell Lake, 9800 ft, 02-Jun-84, Hutchins, R. 11223 (UNM). San Juan Co.: Chuska Mts, 1.5 mi n of Whiskey Lake, 13-Jun-00, O'Kane, S. 4908 (SJNM). San Miguel Co.: hwy 60, 1 mi s of Cowles, 20-Jul-79, Hutchins, R. 8332 (UNM); near Willow Creek e of hwy 63, 31-May-80, Hutchins, R. 8850 (UNM); El Porvenir campground, , Hutchins, R. 6898 (UNM). Sandoval Co.: e slope Redondo Peak, 11-Jun-63, Osborn, N. 1125 (UNM); Jemez Mts, Redondo Park, 12-Jul-53, (NMC); Fenton Hill, 24-Jun-79, Hutchins, R. 8154 (UNM); s slope Cochiti, 6500 ft, 17-May-64, Robertson, C. 36 (UNM); Cochiti Mesa top, 09-Jun-64, Robertson, C. 287 (UNM); 16 mi w Los Alamos, 13-Jun-76, Hutchins, R. 5908 (UNM). Santa Fe Co.: 15 mi ne Santa Fe, 31-Jul-76, Hutchins, R. 6340 (UNM). Sierra Co.: along Turkey Run Creek, 7900 ft, 16-May-94, Roalson (NMCR); North facing slope above Diamond Creek near jct of Forest Trail 40 and Forest Trail 42, 25-Sep-93, Roalson, E.H. 743 (NMCR); Forest Trail 40 going S along Diamond Creek, about .25 mi S of its jct with Trail 42, 7900 ft, 07-Jun-94, Roalson, E.H. 838 (NMCR). Socorro Co.: San Mateo Peak, 10142 ft, , Mygatt 110 (UNM); Mt. Withington, 04-Jun-88, Spellenberg, R. 9519 (NMC). Rio Arriba Co.: Frequent in drying soil beside highway 84 at Rio Nutrias bridge, 9 mi south of Tierra Amarilla, 26-Jul-63, Anderson, L.C. 2501 (BRY).

Lathyrus brachycalyx var. *zionis*

San Juan Co.: Armenta Canyon se of Bloomfield, Nacimiento formation, juniper woodland, T28N R10W S25 swl/4, 16-Apr-89, Heil, K. 4868 (BRY, SJNM); B-Square Ranch, Stewart Canyon, 24-May-99, Heil, K. 12978 (SJNM); 5 mi s of Bloomfield, 29-Oct-94, Heil & Melton 8630 (SJNM); Ute Mt, Barker Arroyo near Barker Dom, 28-Apr-89, Heil & Porter 4915 (SJNM); s of the San Juan River, 1.5 mi w of West Hammond Road, 5000 ft, 18 May 1988, Jenkins, B. 6 (SJNM); Angel Peak Recreation Area, 10 May 1982, Howe, L. 1182 (SJNM).

Lathyrus eucosmus

Bernalillo Co.: s of Tijeras, 22-May-77, Hutchins, R. 6851 (UNM); Sandia Mts, 05-Oct-60, 6 (UNM); Tijeras Canyon, 17-Oct-65, Philly 17 (UNM); 2 mi n of Escobosa, 22-May-76, Hutchins, R. 5602 (UNM); Sandia Mts, 31-May-29, Nelson 6273 (UNM); hwy 10, 12-Oct-66, Bradshaw 8155 (UNM); between Albuquerque & Bernalillo, 08-May-31, Castetter 6275 (UNM). Catron Co.: Smith Spring, 27-Jun-00, Sivinski, R. 5219 (UNM). Cibola Co.: Acomita, 14-May-32, Castetter 6276 (UNM). Colfax Co.: 16 mi e of Raton, 12-Jun-71, Hutchins, R. 5848 (UNM); 16 mi e of Raton, 12-Jun-76, Hutchins, R. 5848 (UNM); 18 mi e of Eagle Nest, 12-Jun-76, Hutchins, R. 5861 (UNM); e of Yankee, 14-Jun-80, Hutchins, R. 8974 (UNM); Road Canyon, 25-Jun-80, Wolfe 373 (UNM); 5 mi s of jct hwy 56, 05-Jun-77, Hutchins, R. 6948 (UNM); 10 mi e of Yankee, 02-Jul-73, Higgins, L.C. 7482 (NMC); 9 mi w of Cimarron, 06-Jun-77, Hutchins, R. 6964 (UNM); Johnson Mesa, along hwy 72 about 5 air miles west of Union County line, wooded hills and outcrops, 8000 ft, 28-May-98, Allred, Kelly W. 7154 (NMCR); 3 mi s of Capulin, 20-Jun-80, Hubbard s.n. (UNM); 3 mi w of Cimarron, 05-Jun-77, Hutchins, R. 6958 (UNM). Eddy Co.: 32 mi w of Carlsbad, 28-Apr-88, Dunmire 1057 (UNM). Grant Co.: near Cliff, 27-May-41, Castetter 10652 (UNM); near Gila, 27-May-41, Castetter 10653 (UNM); Gila River bottom near Cliff, 13-Jun-03, Metcalfe, O.B. 131 (NMC). Harding Co.: 6 mi n of Mills on hwy 39, 02-Jul-81, Spellenberg, R. 6034 (NMC); 13 mi n of Roy, 05-Jun-77, Hutchins, R. 6939 (UNM); Mestenito Canyon, 21-May-78, Hubbard s.n. (UNM). Lincoln Co.: hwy 37, 05-Sep-71, Hutchins, R. 3681 (UNM); Glenco, 16-May-36, Castetter 10665 (UNM); Glenco, 17-May-36, Williams s.n. (NMC); Gray, 13-Jun-1898, Skehan, J. 24 (NMC). Luna Co.: on open slope just below ridgetop. just E of summit of Cooke's Peak, 7600 ft, 20-Sep-87, Columbus, J. Travis 1828 (NMCR). McKinley Co.: s of hwy between Crownpoint & U.S. 666, 09-May-00, Heil & Clifford 14478 (SJNM); Cibola Nat. For., 17-Aug-81, McCallum 1343 (UNM); McKinley Coal Mine, 08-Mar-74, Wagner 288 (UNM); Cibola Nat. For., Sixmile Canyon, 28-May-85, Porter, M. 1236 (SJNM); Fort Wingate, 08-Jun-90, Stewart s.n. (UNM); Cibola Nat. For.. 1.5 mi s of Fort Wingate, 21-Jul-95, Clifford, A. 654 (SJNM); Navajo Indian Reservation, Dalton Pass drainage, ca 7.5 mi w of Crownpoint, 09-May-00, Clifford, A. 166 (SJNM); Goat Hill, Ramah Reservation, 06-Sep-89, Hevron, B. 265 (SJNM); near Borrego pass, 28-Jun-00, Heil & Mietty 14908 (SJNM); se of Ramah Chapter House, Indian Reservation, 06-Sep-89, Hevron 269 (UNM). Mora Co.: 2 mi w of Penasco, 01-Jun-41, Hershey, A.L. s.n. (NMC); La Cueva Ranch, 22-Sep-54, Williams s.n. (UNM); hwy 21, sw of Ojo Feliz, 14-Jun-80, Hutchins, R. 9024 (UNM); Vercere Canyon, 29-Jun-81, Fletcher, R. 5217 (UNM); 3 mi s of Wagon Mound, 06-Mar-52, Williams s.n. (UNM); ca. 10 mi n of Ocate, 06-Jun-00, Welsh & Ralphs 26675 (SJNM); Las Vegas, , Cockerell, T.D.A. s.n. (NMC); 20 mi s of Wagon Mound, 05-Jun-77, Hutchins, R. 6913 (UNM); 13.5 mi s of Wagon Mound, 22-Jun-79, Hubbard s.n. (UNM); 2 mi s of Wagon Mound, 20-Jun-80, Hubbard s.n. (UNM); Las Vegas, 24-Jun-1891, Dewey s.n. (UNM). Otero Co.: between Mayhill & Weed, 29-Jun-52, Dunn, D.B. 8202 (NMC); 2 mi w of Mescalero, 30-May-71, Hutchins, R. 3469 (UNM); between Mayhill & Weed, 29-Jun-52, Dunn 8202 (UNM); Cloudcroft, 10-Dec-57, Findley s.n. (UNM). Rio Arriba Co.: , 28-May-91, Fleming, R. 1187 (SJNM); Carson Nat. For., s of Cabestro Point, 09-Jun-95, Clifford, A. 87 (SJNM); 23-Sep-64. Miller, J. 121 (UNM); Jicarilla District, Carson Nat. For., 29-May-87, Spellenberg, R. 9121 (NMC); Carson Nat. For., Jicarilla District, Dike Canyon just n of Bancos Canyon, 09-Jun-95, Heil, K.; Chama River, 18-Aug-04, Wooton, E.O. 2635 (NMC); Jicarilla Indian Reservation, hwy 537 ca. 1.5 mi e of Coyote Lake, 18-Jul-96, Heil, K. 10168 (SJNM); ca. 7 mi n of Lindrith, 05-Jul-00, Heil & Mietty 15018 (SJNM); Turkey Creek, Carson Nat. For., 27-May-87, Knight, P. 3535 (UNM); 10 mi e of Tierra Amarilla, 26-Jun-82, Hutchins, R. 10185 (UNM); Cottonwood Canyon, 28-May-87, Wilken, D.H. 14743 (NMC); Vaqueros Canyon, north of Devil's Mesa, ponderosa pine/gambel oak community with Chrysothamnus nauseosus, Agropyron smithii, & Melilotus, 6800 ft, 30-May-92, Allred, Kelly W. 5679 (NMCR); 1 mi n of Jicarilla Apache Reservation, 24-Jun-60, Martin 4280 (UNM); along Navajo River just w of Amargo Canyon, 06-Jun-00, O'Kane & Heil 4764 (SJNM); Canjilon, 18-Sep-76, Hutchins, R. 6649 (UNM); 2 mi w of Truchas, 18-Aug-77, Hutchins, R. 7178 (UNM); 16.5 mi s of Dulce, 26-Jul-80, Hubbard s.n. (UNM). San Juan Co.: 4 mi s of Aztec, 16-May-47, Rawlins 10 (NMC); Carson Nat. For., 09-Jun-95, Heil, K. 8965 (UNM); s of LaBoca, 18-May-81, Knight, P. 1422 (UNM); Chuska mts, 19-Jun-35, Smith, H. s.n. (NMC); n cliffs of Chaco Canyon, 01-May-37, Clark 47 (UNM); 4 mi n of La Plata town, 11-Aug-81, Spellenberg, R. 6111 (NMC); Cutter Canyon, 08-Jun-70, Wynhoff, J.T. s.n. (NMC); 2 mi s of LaBoca, 18-May-81, Knight, P. 1422 (UNM); Chaco Canyon Nat. Mon., campground, 6500 ft, 29-May-87, Allred, Kelly W. 4393 (NMCR); Navajo Experiment Station, 22-Jun-37, Gardner s.n. (NMC); Chaco Canyon, 24-Aug-40, Castetter 6286 (UNM); se of Blanca, 29-Apr-50, Clark, O.M. (UNM). San Miguel Co.: 1/2 mi e of Trujillo, 15-Jun-84, Hubbard s n. (UNM); n of Terrero, 21-Jul-79, Hutchins, R. 8394 (UNM); near El Porvenir, 05-Jun-77, Hutchins, R. 6899 (UNM); near La Cinta Creek, 13 mi s of Solano, 26-May-78, Hess, W. 4188 (NMC); n of Villanueva, 04-Jun-77, Hutchins, R. 6874 (UNM); nw of Rowe, 21-Jun-81, Hutchins, R. 9671 (UNM); 4 mi n of Pecos, 01-Jun-80, Hutchins, R. 8863 (UNM); 4 mi s of Terrero, 01-Jun-80, Hutchins, R. 8861 (UNM); 6 mi n of Pecos on hwy 63, 20-Jul-79, Hutchins, R. 8316 (UNM); near Pecos, 15-Aug-08, Standley, P.C. 4924 (NMC); El Porvenir campground, 04-Jun-77, Hutchins, R. 6892 (UNM). Sandoval Co.: Jemez Pueblo, 30-May-31, Castetter 6272 (UNM). Santa Fe Co.: Santa Fe, 04-May-02, Bartlett, F. 20 (NMC); Santa Fe, Santa Fe Creek, 23-Jul-08, Standley,

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(Lathyrus, Continued from page 5)

P.C. 4512 (NMC); Santa Fe, , Cockerell, T.D.A. s.n. (NMC); hwy 285 n of Whitelakes, 01-Jun-80, Hutchins, R. 8885 (UNM). Sierra Co.: Chiz, 15-Jul-04, Wooton, E.O. 2637 (NMC). Taos Co.: s of Tres Piedras, 26-Jun-82, Hutchins, R. 10223 (UNM); Taos, 02-Jul-32, Castetter 6274 (UNM); 6 mi s of Tres Piedras, 07-Aug-55, Nisbet 10465 (UNM); 4 mi s of Arroyo Hondo, 06-Jun-77, Hutchins, R. 6981 (UNM); Rancho de Taos, 01-Sep-38, Castetter 10666 (UNM). Torrance Co.: NMSU Range & Livestock Research Center (Corona Ranch), northwest corner of West Adams Pasture, T1S, R14E, Sec 3, 6250 ft, 14-Aug-98, Forbes, Adam C. 463 (NMCR); n of Manzano, 22-May-77, Hutchins, R. 6840 (UNM); 7 mi n of Tajique, 22-May-77, Hutchins, R. 6847 (UNM); Manzano forest, 05-Jul-15, King 23 (UNM). Union Co.: J.R. Davis property, 27-May-83, Spellenberg, R. 7064 (NMC); n of Clayton, 17-May-52, Castetter 6284 (UNM); 3 mi n of Clayton, 12-Jun-76, Hutchins, R. 5790 (UNM); 5 mi w of Des Moines, 12-Jun-76, Hutchins, R. 5805 (UNM); 4 mi s of Folsom, 12-Jun-76, Hutchins, R. 5824 (UNM).

Lathyrus graminifolius

Catron Co.: Sheridan Gulch trail about 6 miles se of Glenwood, base fo Mogollon Mts, 6600 ft, 21-May-83, Soreng, R. 2133 (NMC); Wheeler's [ranch, on Apache Creek], 11-Jul-1906, Wooton, E.O. (NMC); Datil Mts, 21-Sep-75, Fletcher, R. 122 (UNM); Datil Mts, 11-Jun-76, Fletcher, R. 299 (UNM); 3 mi e Luna hwy 180, 15-Jun-74, Higgins, L. 8739 (NMC); Mogollon Mts, Iron Creek, 25-Jun-78, Moir, W. 100 (NMC); 10 mi e Luna on hwy 180, 20-Sep-80, Hutchins, R. 9262 (UNM); 4 mi e Luna, 20-Sep-80, Hutchins, R. 9257 (UNM); west fork Gila River, 05-Aug-03, Metcalfe, O.B. 394 (NMC); Datil Mts, 13-Jun-76, Fletcher, R. 375 (UNM). Cibola Co.: Coal Mine canyon, 15-Jul-60, Osborn, N. 244 (UNM); Canyon de Califfia, 24-Sep-77, Marley 850 (UNM); Zuni mts, 14-Jun-69, Riffle, N.L. s.n. (UNM); 10 mi e El Morro, 05-Aug-54, (UNM). Grant Co.: Santa Rita, 09-Oct-04, Metcalfe, O.B. s.n. (UNM); Black Range, Gila National Forest, roadcut through chalky tuff, N33 4.441 W108 0.335, 7433 ft, 28-Aug-02, Kelly W. Allred 8390 (NMCR); Black Range, Hillsboro Peak, 8000 ft, 11-Sep-04, Metcalfe, O.B. 1313 (NMC, UNM); 8 mi w Emory Pass, Hutchins, R. 10597 (UNM). Hidalgo Co.: Animas Mts, 17-Jun-75, Wagner, W. 1013 (UNM); Animas Mts, 15-Sep-90, Ivey 125 (UNM). Lincoln Co.: Ruidoso, 29-Jun-1895, Wooton, E.O. s.n. (NMC); Ruidoso, 03-Jul-1895, Wooton, E.O. s.n. (NMC). Luna Co.: on slope overlooking canyon just NE of Cooke's Peak, 7400 ft, 13-Jun-87, Columbus, J. Travis 1363 (NMCR). McKinley Co.: 1 mi n McGaffey, , Hutchins, R. 7495 (UNM); n of Ramah, 25-Jul-1906, Wooton, E.O. s.n. (NMC); 8 mi s Fort Wingate, 27-May-78, Hutchins, R. 7490 (UNM). San Miguel Co.: Santa Fe National Forest, 17-Aug-96, Atwood, D. 21434 (UNM). Sierra Co.: between Winston & Beaverhead, 20-Jun-52, (UNM); Sawmill Peak, 01-Jun-82, Fletcher, R. 6090 (UNM); Black Range, 6 mi e Grant Co. line, 10-Jun-81, Ward, D. 192 (NMC); On west facing slope above Diamond Creek south and east of the jct of Forest Trails 40 and 42., 25-Sep-93, Roalson, E.H. 760 (NMCR); E. running side canyon to Hoyt Creek, 8000 ft, 02-Sep-94, Roalson, E.H. 1009 (NMCR) Socorro Co.: Magdalena Mts, 29-Jul-74, Hutchins, R. 5134 (UNM); Apache Creek, 21-Jun-1892, Wooton, E.O. 294 (NMC); San Mateo Mts, Bear Trap Canyon, 24-Aug-78, Moir, W. 101 (NMC); Magdalena mts, 27-Jul-75, Hutchins, R. 5585 (UNM); Magdalena mts, 30-Jun-73, Hutchins, R. 4298 (UNM).

Lathyrus latifolius

Bernalillo Co.: Rio Grande valley, 1/2 mi s of Alameda Bridge, 22-Oct-90, Sivinski, R. 1606 (UNM). San Juan Co.: near Flora Vista, roadside, 5500 ft, 01-Sep-00, Heil, K. 15584 (SJNM); hwy 550 0.1 mi s Colorado state line, 09-Aug-78, Hutchins, R. 7745 (UNM). Santa Fe Co.: 1 mi e of Glorieta, 20-Jul-79, Hutchins, R. 8305 (UNM). Sierra Co.: along Percha Creek, 03-Jun-93, McIntosh, L. 2731 (NMC); Kingston, picnic area e side of town along Percha Creek, 30-Jun-85, Worthington, R.D. 13302 (NMC).

Lathyrus leucanthus

Bernalillo Co.: Sandia Mts (?), Bean Canyon, 15-May-1898, Herrick, C.L. 243 (NMC); Sandia Mts, Kiwanis Meadow, 22-Jun-82, Dunbar 77 (UNM); Sandia Mts, 10-Jul-76, Hutchins, R. 6267 (UNM); Sandia Crest, 30-Jun-99, Sivinski, R. 4905 (UNM); Sandia Crest, 07-Oct-82, McIntosh, L. 985 (UNM). Catron Co.: Gila Wilderness, Gila National Forest, Hummingbird Saddle, along trail 182 from Sandy Point to Hummingbird Saddle, about 0.5 miles north of Whitewater Baldy, 9800 ft, 01-Jul-92, Allred, Kelly W. 5695 (NMCR); Datil mts, 12-Jun-76, Fletcher, r. 332 (UNM). Cibola Co.: Zuni Mts, 14-Jun-69, Riffle s.n. (UNM); Mt. Taylor, 14-Jun-61, Osborn, N. 640 (UNM); Mt. Taylor, 21-Jun-98, Ivey (UNM); La Mosca lookout, Mt. Taylor, 25-Jul-76, Hutchins, R. 6312 (UNM); Mt Taylor, 16-Jun-60, Osborn, N. 39 (UNM); Mt Taylor Peak, 23-Jul-60, Osborn, N. 448 (UNM); Mt Taylor Peak, 17-Jun-51, Clark s.n. (UNM). Colfax Co.: Red River Pass, , Nisbet 8677 (UNM). Dona Ana Co.: Organ Mts, 10-Sep-1899, Wooton, E.O. s.n. (NMC). Lincoln Co.: Bonita Lake, 12-May-61, Tomlinson s.n. (UNM); White mts, Eagle Creek, 22-Jul-1899, Turner 157 (NMC); Three Rivers Canyon, 02-May-70, Hutchins, R. 2876 (UNM); Eagle Creek, 30-May-69, Hutchins, R. 1880 (UNM); White Mts, 25-Aug-07, Wooton, E.O. s.n. (NMC); Bonito Lake, 05-Sep-71, Hutchins, R. 3659 (UNM). Los Alamos Co.: Pajarito Mt, 23-Jul-79, Tierney 346 (UNM); Pajarito mt, 20-Jun-79, Foxx 452 (UNM); Ski area, 30-Jun-82, Fletcher, R. 6233 (UNM). McKinley Co.: Cibola Nat. For., Sixmile Canyon, 28-May-85, Porter, M 1238 (SJNM); Chuska Mts, 1.3 mi sw of Whiskey Lake, 8590 ft, 13-Jun-00, Heil, K. 14832 (SJNM); 0.5 mi e of McGaffey lookout, 28-May-78, Hutchins, R. (UNM). Mora Co.: 16 mi nw Mora, 31-Jul-76, Hutchins, R. 6413 (UNM); Pecos Wilderness, 15-Jul-82, Andrews 21316 (UNM). Otero Co.: Sierra Blanca, 18-Jun-49, Clausen, R. 7801 (UNM); vicinity of Sacramento, 12-Jun-69, Conley, W.H. s.n. (NMC); near Cloudcroft, 29-Jun-52, Dunn, D.B. 8191 (NMC); White Mts, La Luz Canyon, 13-May-91, Graber s.n. (NMC); Karr Canyon, 30-May-81, Hutchins, R. 9552 (UNM); 4 mi se of Cloudcroft, 22-Jun-73, Higgins, L.C 7413 (NMC). Rio Arriba Co.: Dulce, 03-Jun-32, (UNM); Lagunitas Lakes, 17-Jun-98, McGrath 64 (UNM); Carson Nat. For., Turkey Creek, , Knight, P. 3488 (UNM); Jicarilla Reservation, Barrella Canyon, 20-May-96, Heil, K. 9636 (SJNM); Jicarilla District, Carson Nat. For., 30-May-87, Spellenberg 9147 (NMC); Cottonwood Canyon, 28-May-87, Wilken, D.H. 14748 (NMC); Hopewell Lake, 01-Jun-84, Hutchins, R. 11216 (UNM); 18 mi e of Tierra Amarilla, 26-Jun-82, Hutchins, R. 10198 (UNM); La Jara Creek, 30-May-64, Osborn, N 1966 (UNM); Nacimiento Peak, 13-Jul-64, Fleck s.n. (UNM); San Pedro Mts, 18-Jul-64, Fleck s.n. (UNM); San Pedro Mt, 12-Jul-64, Fleck s.n (UNM); Canjilon Mts, 12-Jul-63, Goodrow 494 (UNM); Middle Canjilon Lake, 25-Jun-82, Hutchins, R. 10147 (UNM); San Pedro Peak, 11-Jul-64, Fleck. s.n. (UNM). San Miguel Co.: Santa Fe Nat. For., 17-Aug-96, Atwood, D. 21433 (NMC); near El Porvenir campground, 04-Jun-77, Hutchins, R. 6895 (UNM); Terrero, 21-Jul-79, Hutchins, R. 8396 (UNM); Jack's Creek Trail, Pecos Wilderness, 10000 ft, 07-Apr-73, Moir, W.H. 133 (NMC); Winsor Creek, 05-Jul-29, Castetter 6280 (UNM); Holy Ghost Canyon, s of Cowles, 08-May-60, Martin 4124 (UNM); Santa Fe National Forest, 17-Aug-96, Atwood, D. 21433 (UNM); near Willow Creek, 31-May-80, Hutchins, R. 8851 (UNM); Winsor's Ranch, 29-Jun-08. Standley, P.C. 4026 (NMC); Pecos, 01-Sep-1904. Bartlett, F. s.n. (NMC); Terrero, 01-Jun-80, Hutchins, R. 8862 (UNM); Holy Ghost campground, 12-Jul-81, Hutchins, R. 9734 (UNM). Sandoval Co.: Senorito Canyon, 21-Sep-62, Weissenborn 92 (UNM); San Antonio Mt, 01-Jul-75, Ludwig, J. 1252 (NMC); Bland Canyon, 05-Jun-64, Robertson 111 (UNM); Redondo Peak, 26-Jun-63, Osborn, N. 1312 (UNM). Bland Canyon, 06-May-64, Robertson 135 (UNM); Redondo Peak, 11-Jun-63, Osborn, N 1217 (UNM); Jemez mts, Redondo Canyon, 09-Jun-80, Knight, P. 1209 (UNM); 16 mi w of Los Alamos, 13-Jun-76, Hutchins, R. 5911 (UNM). Santa Fe Co.: Santa Fe mts, 16-Jun-1898. Maltby & Cayhill 5 (NMC); Santa Fe Ski Basin, 04-Jul-73, Higgins, L. 7570 (NMC); 15 mi ne of Santa Fe, 31-Jul-76, Hutchins, R. 6355 (UNM); 16 mi ne of Santa Fe, 31-Jul-76, Hutchins, R. 6344 (UNM); Sangre de Cristo Mts, 31-May-63, King 138 (UNM). Sierra Co.: T R S On west facing slope above Diamond Creek south and east of the jct of Forest Trails 40 and 42, 25-Sep-93, Roalson, E.H. 759 (NMCR); On Forest Trail 40 going S along Diamond Creek. About .25 mi S of its jct with Trail 42, 7900 ft, 07-Jun-94, Roalson, E.H. 839 (NMCR). Taos Co.: Twining Camp, 02-Jul-32, (UNM); Hondo Canyon, 15-Jun-67, Mackay 29 (UNM); hwy 3, 5 mi s of U.S. Hill, 15-Jul-78, Hutchins, R. 7733 (UNM); Lake Fork, 08-Jul-67, Mackay 148 (UNM). Torrance Co.: Red Canyon, w of Manzano, 12-Oct-63, Goding 54 (UNM); Red Canyon, 12-Oct-63, Makepeace 48 (UNM); 1 mi w of Cibola Nat. For., 03-May-64, Bedker 1619 (UNM); Manzano Mts, Osha Peak, 14-Jul-63, Bedker 882 (UNM); Manzano Mts, 06-Jun-64, Bedker 1648 (UNM)

Lathyrus polymorphus var. *incanus*

Torrance Co.: 5 mi s of Encino on hwy 285, 17-May-51, Dittmer, H.J. 6285 (UNM).

Lathyrus tingitanus

Socorro Co.: Bosque del Apache, planted fall 1957 in Unit #1, 20-May-58, Fleetwood, R.JU 757 (UNM).

Lathyrus venosus var. *intonsus*

Lincoln Co.: Upper canyon of Ruidoso Creek, 18-Jan-49, Clausen, R.T. 7812 (UNM). Otero Co.: Mescalero Indian Reservation, 25-Jun-36, Plumb, G. s n. (UNM).

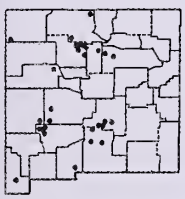
What's In A Name? [and a corrigendum]

The International Code of Botanical Nomenclature allows for and facilitates the nomenclatural transfer of epithets. For instance, Article 11.2 gives as an example: "*Ex. 13. Helianthemum italicum* var. *micranthum* Gren. & Godr. when transferred as a variety to *H. penicillatum* Thibaud ex Dunal retains its varietal epithet and is named *H. penicillatum* var. *micranthum* (Gren. & Godr.) Grosser" (ICBN, 2000, St. Louis Code). This was illustrated in our last issue in our citation of Richard Spellenberg's article on *Boerhavia coulteri* (Sida 20:151-155. 2002), wherein he concluded that what had been named *B. spicata* Choisy var. *palmeri* S. Wats. should be re-classified as a variety of *B. coulteri* (Hook. f.) S. Wats. Applying the rule illustrated above, the new combination becomes *B. coulteri* var. *palmeri* (S. Wats.) Spellenberg. The taxon in question was also a new record for New Mexico, and when we listed it in the Plant Distribution Reports, we mixed up the two species involved and cited the name incorrectly as *B. spicata* var. *palmeri* (S.Wats.) Spellenberg.

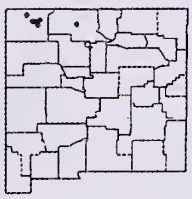
With apologies to our friend Richard, we correct this report, hoping to lessen the confusion it might have caused: The plant name to be added to our list of New Mexico plants is *Boerhavia coulteri* (Hook. f.) S. Wats. var. *palmeri* (S. Wats.) Spellenberg.

Just what or who "Hook. f." or "S. Wats." refers to is perhaps the subject of another little piece for this column.

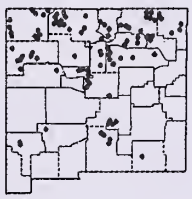
[Ed. Note: The editor also wishes to acknowledge the convention of the "editorial we," without whose graces he would have to face this in the singular.]



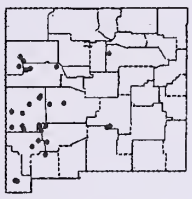
Lathyrus arizonicus



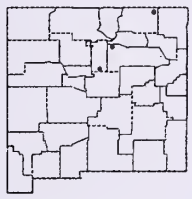
Lathyrus brachycalyx var. *zionis*



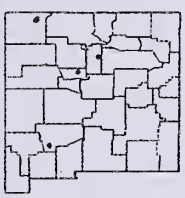
Lathyrus eucosmus



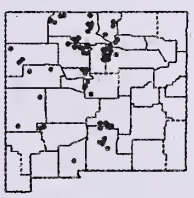
Lathyrus graminifolius



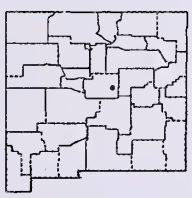
Lathyrus hirsutus (fide Isely 1998)



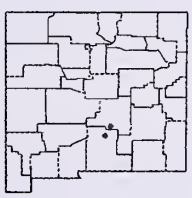
Lathyrus latifolius



Lathyrus leucanthus



Lathyrus polymorphus var. *incanus*



Lathyrus venosus var. *intonsus*

Plant Distribution Reports

New records and significant distribution reports for New Mexico plants should be documented by complete collection information and disposition of a specimen (herbarium). Exotic taxa are indicated by an asterisk (*).

— Ken Heil [San Juan College, 4601 College Blvd., Farmington, NM 87402]

Eriogonum villiflorum Gray (Polygonaceae): San Juan Co., Navajo Nation, about 6.5 miles north of Navajo, Chinle formation in Pinyon-Juniper-Purshia-Chrysothamnus community, UTM E 0678159, N 3983486, 4 Jun 2001, N.D. Atwood & A. Clifford 27612 (SJNM)

— David Bleakly [3813 Monroe, NE, Albuquerque, NM 87110]

****Cardaria pubescens*** (C.A. Meyer) Jarmolenko (Brassicaceae): San Juan Co., along County Road 3500 about 3/4 miles south of Flora Vista, a few hundred yards north of the Animas River, a small patch, 12 Sep 2002, D. Bleakly 4612 (SJNM, UNM).

— Kelly Allred [MSC Box 3-I, New Mexico State University, Las Cruces, NM 88003]

Lathyrus brachycalyx Rydberg var. ***zionis*** (C.L. Hitchcock) S.L. Welsh (Fabaceae): San Juan Co., Armenta Canyon southeast of Bloomfield, Nacimiento formation, juniper woodland, 5800 ft, 16 Apr 1989, K. Heil 4868 (BRY, SJNM); B-Square Ranch, Stewart Canyon, 24 May 1999, K. Heil 12978 (SJNM); Ca. 5 mi s of Bloomfield on hwy 44 to top of mesa, e ca. 9 mi on major dirt road, 29 Oct 1994, Heil & Melton 8630 (SJNM); Ute Mt, Barker Arroyo near Barker Dome, n of Fruitland, 28 Apr 1989, Heil & Porter 4915 (SJNM); s of the San Juan River, 1.5 mi w of West Hammond Road, 5000 ft, 18 May 1988, Jenkins, B. 6 (SJNM); Angel Peak Recreation Area, 10 May 1982, Howe, L. 1182 (SJNM). Rio Arriba Co., along hwy 84 at Rio Nutrias bridge, 9 miles south of Tierra Amarilla, 28 Jul 1963, L.C. Anderson 2501 (BRY). [The specimens at BRY were determined by S.L. Broich (OSU) and are the basis for the report of this taxon for NM in "A Utah Flora".]

— Jim McGrath [20 Robin Ct, Edgewood, NM 87015].

Carex macloviana Urv. (Cyperaceae): Taos County, Latir Lakes, eastern shore of uppermost lake on south side of outflow stream, SW/SE sec. 29 T30N, R14E, UTM: 407278N, 045812E, 11,900 feet (3625 m), alpine setting at timberline, edge of lakeshore - about 6 inches above lake level, growing with Deschampsia cespitosa, Achillea lanulosa, Potentilla, 14 August 2001, J. McGrath 357 (MICH, UNM) [Det: A. Reznicek]

— Jonathan Coop [Department of Botany, University of Wisconsin–Madison, Birge Hall 430 Lincoln Dr., Madison, WI 53706]

Carex brunnescens (Persoon) Poiret (Cyperaceae): Sandoval Co., Valles Caldera National Preserve, Alamo Bog, N 35°54.878' , W 106°38.219', open wetland, associated with Carex aquatilis, C. canescens, C. utriculata, Deschampsia caespitosa, Picea pungens, 11 July 2002, J.D. Coop, A.L. Hipp, and R. Massatti 539 (WIS).

****Carex conoidea*** Willdenow (Cyperaceae): Sandoval Co., Valles Caldera National Preserve, Valle Jaramillo, N 35°54.728' , W 106° 29.877', infrequent in wet meadows, associated with Allium geyeri, Carex lanuginosa, C. microptera, Juncus balticus, 8750 ft, 21 July 2002, J.D. Coop 567 (WIS). [Det: R.Naczi]

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Kelly Allred

The New Mexico Botanist

Prickly problems

Richard Spellenberg

Biology Department, New Mexico State University, Las Cruces, NM 88003

In 1986 Spellenberg et al. reported *Solanum carolinense* L. from Mora Co., NM, as a first record for the state, clearly misidentifying the species. An annotation of the specimen by S. Saufferer, of the USDA, corrected the problem, and Spellenberg noted the correction in 2001. In the meantime, Worthington collected *S. dimidiatum* in the spring of 1999 in the Guadalupe Mts., in Eddy Co., believing the collection to represent a state record, also originally calling his specimen *S. carolinense*, but correcting it to *S. dimidiatum*. Somehow, *S. carolinense* was not removed from Allred's checklist (27 Mar 2002), but in hindsight this was an omission based in botanical clairvoyance.

Solanum carolinense has recently wandered into the state, and therefore should remain in Allred's checklist, as he so astutely predicted by not removing the name. The new record was found in a horticultural planting on the NMSU campus, conveniently and conspicuously located between the Biology building and the herbarium, where it was difficult to overlook (NM, Doña Ana Co., Las Cruces, New Mexico State University, Frenger Mall between Foster Hall and Science Hall, 9 Oct 2002, *Spellenberg 13349*, BRIT, NMC).

Spellenberg, R. 2001. New plant distribution records. The New Mexico Botanist 19:7 [*Solanum dimidiatum*].

Spellenberg, R, R. Worthington, P. Knight, & R. Fletcher. 1986. Additions to the flora of New Mexico. Sida 11(4):455-470.

[Ed. Note: Allred makes no claims to claivoyance nor astute predictions, but he is susceptible to oversights due to inattention to details. Thus, a more likely explanation for why the name stayed on the list!]

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Number 26 March 10, 2003

A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University.

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- John Bigelow in New Mexico 6
- Plant Distribution Reports 7
- Botanical Literature of Interest..... 8

A Taxonomic Review of the Tendril-bearing Legumes (Leguminosae) in New Mexico: II. *Vicia*

Kelly W. Allred & Susannah Johnson

Range Science Herbarium, New Mexico State University, Las Cruces, NM 88003

Introduction

An earlier article (Johnson & Allred 2003) reviewed the genus *Lathyrus* in New Mexico. This paper takes up the remaining tendril-bearing plants of the Leguminosae of New Mexico, *Vicia*. The genera are similar and may be easily confused if one fails to examine the style tip: *Vicia* has a prominent tuft of hairs in a ring at the tip, whereas *Lathyrus* has hairs extending down one side only, being glabrous on the other. Species of *Vicia* usually have smaller leaflets and flowers than those of *Lathyrus*, but there is considerable overlap in these features.

We have not undertaken to monograph the genus, only to provide keys, descriptions, and geographic information for New Mexico plants. Synonymy is generally taken from other pertinent monographs or revisions. Types were not consulted, except as they may have been available on the internet (such as the type collection at NY).

No new combinations or taxonomic novelties are proposed herein.

1 Style hairy on all sides in a tuft or ring at the apex; wings of corolla adherent to the keel..... ***Vicia***
1 Style hairy above the middle only on one side, glabrous on the other; wings of corolla essentially free from the keel ..... ***Lathyrus***

Vicia Linnaeus vetch

Annual or perennial herbs, often trailing or somewhat vine-like, the pubescence basifixed. Leaves pinnately compound, the terminal leaflet modified into a tendril, this simple or branched, prehensile (usually) or not; stipules clasping or sagittate, usually toothed. Inflorescence an axillary raceme, with 1-numerous flowers. Flowers perfect. Calyx of united sepals forming a campanulate tube, pubescent or glabrous, the lobes (teeth) nearly linear and equal or unequal. Corolla papilionaceous, with banner (standard), wings, and keel, the 2 wing petals somewhat adherent to the keel. Stamens 9+1. Style compressed or terete, pubescent in a ring just below the capitate sigma. Fruit a legume, sessile or essentially so, the valves dehiscent and coiling.

The classic work for North American *Vicia* is F.J. Hermann's "Vetches of the United States — native, naturalized, and cultivated" (USDA Agr. Hndbk. 168). Additional references useful in this review, mostly of a floristic nature, were Barneby (1989), Great Plains Flora Association (1986), Isely (1998), Lassetter (1984), Martin & Hutchins (1981), Tidestrom & Kittell (1941), Welsh et al. (1993), and Wooton & Standley (1915).

Apart from the technical features of the style and stigma, many *Vicia* can be told from most *Lathyrus* by the larger leaflets of the latter. Leaflets in *Vicia* are mostly 1-2 cm long (sometimes longer in *V. ludoviciana, V. americana,* and *V. pulchella*), whereas leaflets in *Lathyrus* are mostly 3-10 cm long (sometimes shorter in *L. arizonicus, L. laetivirens, L. leucanthus,* and *L. polymorphus*). In addition, no *Vicia* possess the winged stems and petioles of some *Lathyrus*.

We have included in the key and text (not bolded) *Vicia sativa*, a common garden escape, even though we as yet have no record of its occurrence in New Mexico.

1 Racemes sessile or subsessile, bearing only 1-2 (sometimes 3) flowers; flowers 1-3 cm long.....
..... *V. sativa*
1 Racemes pedunculate, 1- to several-flowered; flower length various, 0.5-2.5 cm long

(Continued on page 2, Vicia)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(*Vicia*, continued from page 1)

2 Flowers large, 12-25 mm long
3 Herbage rather densely to sparsely villous; racemes densely 10- to 20-flowered or more; calyx gibbous so the pedicel appears to be attached laterally ..... ***V. villosa***
3 Herbage glabrous to sparsely pilose; racemes loosely 1- to 9-flowered; calyx not or only slightly gibbous so the pedicel appears to be attached basally ..... ***V. americana***
2 Flowers small, 5-10 mm long
4 Flowers whitish or cream-colored; peduncles bearing 10-20 flowers; plants perennial ..... ***V. pulchella***
4 Flowers bluish; peduncles bearing 1-15 flowers; plants annual or perennial
5 Leaflets 6-16; pods glabrous; calyx with appressed, whitish hairs; plants annual ..... ***V. ludoviciana***
5 Leaflets 4-6; pods silky hairy; calyx with spreading, usually yellowish, hairs; plants perennial ..... ***V. leucophaea***

Vicia americana Muhlenberg ex Willdenow AMERICAN VETCH
[*Vicia americana* Muhlenberg ex Willdenow var. *minor* Hooker, *Vicia americana* Muhlenberg ex Willdenow var. *linearis* (Nuttall) S. Watson, *Vicia caespitosa* A. Nelson, *Vicia linearis* Nuttall, *Vicia linearis* Nuttall var. *caespitosa* (A. Nelson) A. Nelson, *Vicia sparsifolia* Nuttall].

Plants perennial, rhizomatous. Stems erect to sprawling, 10-100 cm long. Leaflets 8-16 in number, 1-3.5 cm long, 1-15 mm wide, broadly elliptic to linear, the herbage generally glabrous or puberulent. Tendrils prehensile, simple or branched (ours). Racemes 3– to 9-flowered, shorter than the leaves. Flowers bluish, purplish, or whitish, 1.5-2.5 cm long. Pods glabrous or pubescent, 2-3.5 cm long, 4-7 mm wide, on a stipe 2-5 mm long.

Distribution in New Mexico: Essentially throughout the state except for the eastern plains; probably our most common vetch.

Of New Mexico vetches, only *Vicia americana* and *V. villosa* have large flowers (longer than 12 mm). The latter is rather easily distinguished by the features in the key.

Hermann (1960) recognized *Vicia americana* as comprising a single species with five varieties. In a more detailed study, Gunn (1968) reduced the number of varieties to two, and this has been followed in subsequent treatments (i.e., Barneby 1989; Isely 1998). The two varieties (var. *americana* and var. *minor*) have been distinguished by a variety of features, most notably tendril development, leaflet shape and texture, and tendril development (Table 1).

Examination of New Mexico plants showed a range of variation in these features spanning from one variety to the other. Tendril development aligned with var. *americana*, flower number with var. *minor*, and leaflet shape and texture was intermediate. In particular, leaf shape showed a continuum of variation. It was impossible to distinguish any meaningful discontinuities in this feature (Figure 1, Chart 1), even though the extremes are markedly different.

Any attempt to define boundaries between these two varieties in New Mexico populations would seem to be entirely arbitrary. We have therefore chosen not to recognize infraspecific variation in New Mexico plants of *Vicia americana*.

Table 1. Comparison of features distinguishing the varieties of *Lathyrus americana*

var. ***americana***	**New Mexico plants**	var. ***minor***
tendrils prehensile, branched	prehensile, all branched	**tendrils** not prehensile, not branched
leaflets broadly elliptic to oblong, generally not coriaceous	broadly elliptic to linear, hardly to somewhat coriaceous	**leaflets** oblong to linear, commonly coriaceous
flowers 5-9 per raceme	3-4	**flowers** 3-4 per raceme

Figure 1. Leaflet silhouettes from 62 plants of *Vicia americana* from New Mexico, arranged by length.

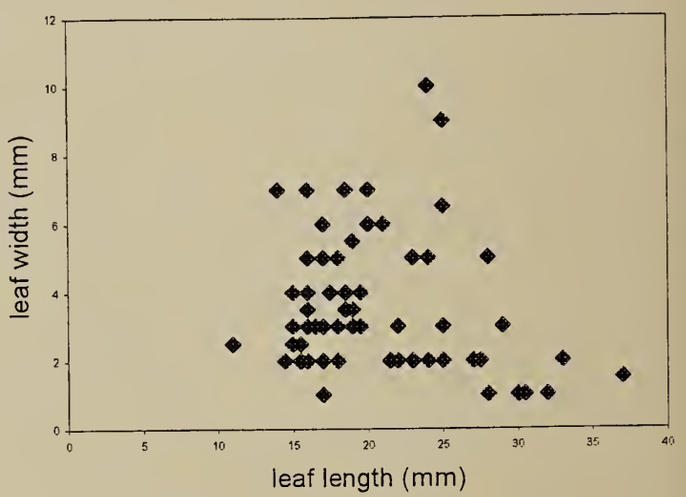

Chart 1. Display of leaf length & leaf width for 62 plants of *Vicia americana* from New Mexico.

Vicia leucophaea Greene MOGOLLON VETCH.

Plants perennial. Stems erect to sprawling, 30-80 cm long. Leaflets 4-6(8) in number, 1-2 cm long, 1-3 mm wide (those of the basal leaves sometimes broader), linear to narrowly oblong, the herbage plainly to sparsely pilose. Tendrils prehensile, mostly simple. Racemes 1– to 2-flowered, shorter than the leaves. Flowers whitish to cream-colored, spotted or striate, 7-9 mm long. Pods puberulent, 2-4 cm long, 4-6 mm wide, nearly sessile.

Distribution in New Mexico: Rather uncommon in the mountains of the southwestern quarter.

Mogollon vetch extends southward through southeastern Arizona to Durango, Mexico.

Vicia ludoviciana Nuttall ex Torrey & Gray subsp. ***ludoviciana*** LOUISIANA VETCH [*Vicia exigua* Nuttall].

Plants annual. Stems erect to sprawling, 10-60 cm long. Leaflets 6-16 in number, 1-2(3) cm long, 1-3 mm wide, elliptic to linear, the herbage glabrous or pubescent. Tendrils prehensile, simple or branched. Racemes 1– to 15-flowered, equaling or surpassing the leaves. Flowers bluish to purplish, 4.5-8 mm long. Pods glabrous, 1.5-3.5 cm long, 4-7 mm wide, on a short stipe about 1 mm long.

Distribution in New Mexico: Widely scattered locales throughout the state.

The *Vicia ludoviciana* complex comprises numerous races, both geographical and ecological, and is notoriously difficult to evaluate. Without attempting yet another revision, we rely here on Lassetter's (1984) monograph of the complex. He reports a single subspecies for New Mexico, subsp. *ludoviciana*, composed of several races or phases, two of which occur in the state (referred to as races 4 & 5 by Lassetter). His race 5 may have numerous flowers on the raceme (up to 15 or so), and could be confused with *V. pulchella*, which also has numerous flowers. The latter is distinguished by whitish or cream

(*Continued on page 3, Vicia*)

(*Vicia, continued from page 2*)
flowers, whereas *V. ludoviciana* always has bluish flowers (though they may have whitish patches). We find little utility in distinguishing the races, and are content with being able to identify the species.

Vicia ludoviciana subsp. *leavenworthii* (Torrey & Gray) Lassetter & Gunn has been reported from New Mexico in earlier floristic literature, but Lassetter (1984) confines this subspecies to central Texas and Oklahoma.

Vicia pulchella Humboldt, Bonpland, & Kunth SWEET VETCH [*Vicia melilotoides* Wooton & Standley].

Plants perennial. Stems sprawling to scandent, sometimes entangled, 50-150 cm long. Leaflets 8-16 in number, 1-2 cm long (sometimes shorter or longer), 1-3 mm wide, elliptic to linear, the herbage generally glabrous or puberulent. Tendrils prehensile and branched. Racemes (5)10– to many-flowered, exceeding the leaves. Flowers whitish with a spotted keel, 5-10 mm long. Pods glabrous, 2-3.5 cm long, 6-8 mm wide, nearly sessile.

Distribution in New Mexico: Rather common in the central and western mountains.

Vicia sativa Linnaeus var. *angustifolia* Linnaeus GARDEN VETCH [*Vicia angustifolia* Linnaeus, *Vicia sativa* Linnaeus subsp. *nigra* (Linnaeus) Ehrhart].

Plants annual. Stems erect to sprawling, 10-50 cm long. Leaflets 8-16 in number, 1.5-3 cm long, 1-3 mm wide, oblong to linear, the herbage glabrous to puberulent. Tendrils prehensile, simple or branched. Racemes sessile, 1– to 3-flowered, shorter than the leaves. Flowers bluish, purplish, or whitish, 1-3 cm long. Pods glabrate, 2.5-6 cm long, 4-8 mm wide, sessile.

Distribution in New Mexico: Not definitely known from New Mexico in the wild.

Wooton and Standley (1915) reported this exotic European species from "a wet meadow near Chama" based on Standley 6696, but this specimen cannot be found in any of our herbaria, and the record stands undocumented by any later collections. Isely (1998) does not record it from the state and says it is "almost absent from Mountain and Intermountain regions" (p. 954). It may occasionally escape from gardens, but apparently does not persist.

Isely (1998) and others choose to treat this at the subspecific level (as subsp. *nigra*).

Vicia villosa Roth WOOLY VETCH [*Vicia dasycarpa* Tenore, *Vicia villosa* Roth var. *glabrescens* W.D.J. Koch, *Vicia villosa* Roth subsp. *varia* (Host) F.M.L. Corbière].

Plants annual. Stems erect to sprawling, 50-100 cm long. Leaflets 12-18 in number, 1-3 cm long, 2-4 mm wide, oblong to elliptic, the herbage glabrous to villous. Tendrils prehensile and branched. Racemes 10– to numerous-flowered, equaling to exceeding the leaves. Flowers bluish to whitish, 1-2 cm long. Pods glabrous, 1.5-4 cm long, 6-10 mm wide, on a stipe 2-3 mm long.

Distribution in New Mexico: Scattered locales in the state, all from disturbed roadsides, fields, etc.

Vicia villosa is widely cultivated in the world for forage, and as such it had been known for many years in New Mexico from a few old collections from agricultural plantings. Recent work (since the 1970s) has disclosed wooly vetch in the wild, apparently escaping and persisting along roadways and similar sites.

Two weak subspecies (or varieties) have been distinguished, largely based on vestiture. All the specimens we have seen belong to subsp. *villosa*, with the herbage rather conspicuously spreading-villous. Subspecies *varia*, where the herbage is glabrous or nearly so, was reported from Curry County (Great Plains Flora Association 1977), but we have not seen a specimen. Numerous flowers and a gibbous calyx separate glabrous forms from *Vicia americana*.

Acknowledgments

We acknowledge with pleasure the assistance and cooperation of the curators and staff of NMC, NMCR, SJNM, and UNM, who generously allowed access to their collections. Ron Mortensen plotted the maps. Lynda Allred helped to record locality data during our visits to herbaria.

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Appendix: Specimens Examined

Vicia americana

Bernalillo Co.: Sandia Crest, 10600 ft, 10-Jul-76, Hutchins, R. 6263 (UNM); Sandia Mts, ft, 20-Jun-42, Clark 10230 (UNM). Catron Co.: Mogollon Mts, Gila National Forest, ponderosa forest 3.7 miles southeast of jct with Bursum Rd and 5.3 miles southeast of Collins Park, northeast of Elk Mt, 7645 ft, 11-Aug-99, Allred, Kelly W. 7564 (NMCR); Datil mts, 9000 ft, 11-Jun-76, Fletcher, R. 335 (UNM); hwy 180, w of Reserve, 20-Sep-80, Hutchins, R. 9242 (UNM); Tularoso Mts, Eagle Peak, 9700 ft, 19-Jun-78, Moir, W.H. 112 (NMC); Mogollon Mts, w fork Gila River, 8000 ft, 13-Aug-03, Metcalfe, O. B. 464 (NMC); Beaverhead, ft, 21-Jun-52, 6687 (UNM); 5 mi n of Willow Creek, ft, 25-Jul-62, Martin, W.C. 73 (UNM); Mineral Creek [about 6 mi n of Glenwood], 7500 ft, 01-Jul-1919, Warnock, C. s.n. (NMC); Willow Creek, Mogollon Mts, Jones 1054 (UNM); Silver Creek, 7000 ft, 03-Jul-1912, (NMC). Cibola Co.: La Mosca Canyon, 25-Jul-76, Hutchins, R. 6310 (UNM); Mt Taylor, Lilies Spring, 12-Jun-61, Osborn 623 (UNM); Mts w of Grants Station, 01-Aug-1892, Wooton, E.O. 293 (NMC); Craters, 28-Jul-06, Wooton, E.O. s.n. (UNM); La Mosca Lookout, Mt. Taylor, 14-Jun-61, Osborn 643 (UNM); summit of Mt. Taylor, 11280 ft, 18-Jul-59, Martin, W.C. 3365 (UNM); Mt. Taylor, Salazar Spring, 20-Jun-98, Ivey s.n. (UNM); Mt. Taylor, 8900 ft, 09-Jul-32, Castetter 6696 (UNM); Mt Taylor, bottom of Water Canyon, 16-Jun-60, Osborn 40 (UNM); Zuni Mts, La Jara Spring, 14-Jun-69, Riffle s.n. (UNM). Colfax Co.: hwy 64 w of Cimarron, 06-Jun-77, Hutchins, R. 6963 (UNM); Along hwy 64 7 miles east of Raton, plains grassland vegetation, disturbed roadside pull-out, 6700 ft, 27-May-98, Allred, Kelly W. 7129 (NMCR); 10 mi e of Yankee, 02-Jul-73, Higgins, L.C. 7513 (NMC). Red River pass, 01-Jul-55, Nisbet 8671 (UNM). Dona Ana Co.: Organ Mts, 01-Jun-1891, Wooton, E.O. s.n. (NMC). Grant Co.: Mogollon Creek, 8000 ft, 20-Jul-03, Metcalfe, O.B. 278 (NMC); Mogollon Mts, lower plaza, Frisco, 6000 ft, 25-Jul-1900, Wooton, E.O. s.n. (NMC); Black Range, e of Santa Rita, 14-Aug-42, Clark, O.M. 3243 (UNM); Black Canyon campground, 32 mi n of Mimbres, 7100 ft, 18-Jun-68, Hess, W. 1998 (NMC); 15 mi nw of Silver City, 5500 ft, 09-May-68, Hess, W. 1880 (NMC). Hidalgo Co.: Animas Mts, upper Pine Canyon, 04-Jun-76, Hubbard, J.P. s.n. (NMC); Animas Mts,

(*Continued on page 4, Vicia*)

(Vicia, continued from page 3)
6800 ft, 17-Jun-75, Wagner, W. 1029 (UNM). Lincoln Co.: South Fork Creek area, 7480 ft, 31-Aug-68, Hutchins, R. 1634 (UNM); Eagle Creek, 6 mi w of Alto, 7600 ft, 16-Jul-77, Hutchins, R. 7105 (UNM); e side of Eagle Creek Canyon road, 3.5 mi nw of Alto, 7800 ft, 19-May-81, Ward, D. 129 (NMC); 3 mi w of Lincoln, 28-Apr-90, Sanderson, M.W. s.n. (NMC); head of Pierce Canyon, 8000 ft, 13-Jul-1920, Hendricks, B.A. 2 (NMC); Cedar Creek 1/2 mi n of Ruidoso, 16-Aug-59, Hrrington s.n. (UNM); White Mts, 01-Aug-65, Hutchins, R. 786 (UNM); Eagle Creek, Gilmore's Ranch, 17-May-1899, Turner 41 (NMC); hwy 37, 7 mi s of Nogal, 04-Sep-71, Hutchins, R. 3646 (UNM); Capitan Mts, 10060 ft, 10-Aug-95, Lee-Chadde, S. 103 (NMC); White Mts, 25-Aug-07, Wooton & Standley 3418 (NMC); 1 mi w Alto, 7600 ft, 28-Jul-81, Ward, D. 468 (NMC); McBride's Place, White Mts, 26-Jul-1899, Turner, B.A. 90 (NMC). Los Alamos Co.: between hwy 4 and Apache Spring, 27-Jul-75, Halley 47 (UNM); Pajarito Canyon, 7000 ft, 24-Jul-79, Tierney 303 (UNM); Bandelier Nat. Mon., Frijoles Mesa, 27-Jul-75, Halley 54 (UNM); upper Frijoles Canyon, 7000 ft, 07-Jul-82, Dunbar 592 (UNM); Pajarito Canyon, 6200 ft, 07-Jul-79, Tierney 135 (UNM); Frijoles Mesa, 6800 ft, 27-Jul-75, Halley 54 (UNM); Frijoles Canyon, Bandalier Nat. Mon., 27-Jun-41, Clark s.n. (UNM). Luna Co.: on open slope just below ridgetop, just E of summit of Cooke's Peak, 7600 ft, 20-Sep-87, Columbus, J. Travis 1828 (NMCR). McKinley Co.: Navajo Reservation, s Chuska Mts, 7500 ft, 04-Jun-01, Cifford, A. 569 (SJNM). Mora Co.: Pecos Wilderness, along river, 9380 ft, 15-Jul-82, Andrews 225 (UNM); Canyon Colorado Equid Sanctuary, Wagon Mound, 5960 ft, 28-May-90, Smith, G. 10 (NMC); n of Wagon Mound, 14-Jun-80, Hutchins, R. 9006 (UNM); Coyote Creek State Park n of Guadalupita, 03-Oct-81, Hutchins, R. 9980 (UNM); 16 mi nw of Mora, 9300 ft, 31-Jul-76, Hutchins, R. 6411 (UNM). Otero Co.: Sacramento Mts, La Luz Canyon, Lincoln National Forest, at jct with road to Bailey Canyon, mixed confer forest with ponderosa, douglas fir, aspen, 8500 ft, 23-May-02, Kelly W. Allred 8229 (NMCR); Sacramento Mts, La Luz Canyon, meadow area at junction with Bailey Canyon road, mixed conifer vegetation, 8385 ft, 31-May-01, Allred, Kelly W 8056 (NMCR); White Mts, Mescalero Indian Reservation along hwy 244, about 6 miles southeast of jct with hwy 70, ponderosa pine community along weedy roadside, 7500 ft, 18-Sep-93, Allred, Kelly W. 6069 (NMCR); 12 mi nw of Cloudcroft, Schofield Canyon, 13-Sep-60, Martin, W.C. 4456 (UNM); Cloudcroft, 03-Jul-49, Castetter 6908 (UNM); 1 mi ne of Cloudcroft, 8700 ft, 29-Jun-52, Dunn, D.B. 8183 (NMC); Sacramento Mts, 8 mi w of Weed, 8000 ft, 30-May-77, Higgins, L.C. 10233 (NMC); 4 mi se of Cloudcroft, 22-Jun-73, Higgins, L.C. 7417 (NMC); Sacramento Mts, Cloudcroft, 19-Jul-1899, Wooton, E.O. s.n. (NMC); 1 mi ne of Cloudcroft, 8700 ft, 29-Jun-52, Dunn, D.B. 8197 (NMC); 1 mi ne Cloudcroft, 9000 ft, 29-Jul-51, Dunn, D.B. 7550 (NMC); 5.9 mi w of Sacramento, 8800 ft, 06-Aug-69, Conley, W. s.n. (NMC); 8 mi se of Cloudcroft, 7700 ft, 30-May-81, Hutchins, R. 9560 (UNM); Sacramento Mts, James Canyon, 26-Jun-1899, Wooton, E.O. s.n. (NMC). Rio Arriba Co.: Meadows, Cumbres Range, 07-Aug-51, Clark s.n. (UNM); San Pedro Peaks area, 10000 ft, 18-Jul-64, Fleck s.n. (UNM); Canjilon, , Foster 17 (UNM); San Pedro Peak, 10500 ft, 11-Jul-64, Fleck s.n. (UNM); Jicarilla Reservation, ft, 18-Jul-96, Heil, K. 10200 (SJNM); Carson Nat. For., 24-Jun-95, Clifford, A. 524 (SJNM); Jicarilla Reservation, 18-Jul-96, Heil, K. 10154 (SJNM). San Juan Co.: Chuska Mts, 02-Jul-55, 8646 (UNM); Chuska Mts, 9120 ft, 04-Jun-00, Cifford, A. 418 (SJNM). San Miguel Co.: Pecos, 01-Jul-1904, Bartlett, F. 196 (NMC); upper Pecos River, 16-Jun-1898, Maltby & Cayhill 7 (UNM); 5 mi se of Gallinas, 6600 ft, 05-Jun-77, Hutchins, R. 6901 (UNM); Soldier Creek, 9500 ft, 01-Sep-62, Weissenborn 69 (UNM); n of Glorieta, 7400 ft, 24-Aug-08, Standley, P.C. 5264 (NMC); Beulah, 01-Aug-1899, Cockerell, T.D.A. s.n. (NMC); Winsor's Place [near Cowles], 8400 ft, 29-Jun-08, Standley, P.C. 4008 (NMC); near Cowles, 05-Jul-31, Castetter 6699 (UNM); near Pecos, 6700 ft, 17-Aug-08, Standley, P.C. 5019 (NMC); Pecos River n of Terrero, 01-Jun-80, Hutchins, R. 8857 (UNM); Jack's Creek campground, 21-Jul-79, Hutchins, R. 8344 (UNM); hwy 85, 2 mi n of Las Vegas, 05-Jun-77, Hutchins, R. 6905 (UNM); near Storrie Lake, 6500 ft, 28-Jun-73, Malcheski, P. 603 (SJNM). Sandoval Co.: Valles Caldera National Preserve, , Hartman, R.L. (NMCR); 16 mi w of Los Alamos, 13-Jun-76, Hutchins, R. 5909 (UNM); Redondo Peak, 11-Jun-63, Osborn 1203 (UNM); Valles Caldera, 8500 ft, 26-Jun-01, Hartman, R. 71399 (UNM); Sandia Mt near North Sandia Peak, 07-Aug-95, Sivinksi, R. 3163 (UNM); Bland Canyon, 6400 ft, 05-Jun-64, Robertson 99 (UNM); Valle Grande, 09-Jul-60, Jones 170 (UNM); Baca Land & Cattle Co., Suphur Creek, 8250 ft, 01-Jul-75, Ludwig, J. 1280 (NMC); Las Conchas marsh, meadow, 18-Sep-60, Howe 2 (UNM): e slope Redondo Peak, 11-Jun-63, Osborn 1122 (UNM). Santa Fe Co.: 18 mi ne of Santa Fe, 10000 ft, 31-Jul-76, Hutchins, R. 6349 (UNM); Holy Ghost Creek, 9000 ft, 24-Aug-60, Martin, W.C. 4354 (UNM); hwy 475 ne of Santa Fe, 31-Jul-76, Hutchins, R. 6343 (UNM); Twinnings, 8900 ft, 02-Jul-32, Castetter 6695 (UNM). Sierra Co.: along Diamond Creek. About .25 mi S of its jct with Trail 42. Ponderosa, Gambel's oak. Picea dominant. Flowers purple., 7900 ft, 07-Jun-94, Roalson, E. H. 837 (NMCR); 1 mi w of Kingston, 8000 ft, 08-May-05, Metcalfe, O.B. 1603 (UNM); 1 mi w of Kingston, 8000 ft, 08-May-05, Metcalfe, O.B. 1603 (NMC). Socorro Co.: below S. Baldy above Water Canyon, 11-Jun-59, Martin, W.C. 3237 (UNM); Bear Trap Canyon, San Mateo Mts, 29-Jul-61, Jones s.n. (UNM); Magdalena Mts, 8000 ft, 10-Mar-64, Skinner 49 (UNM). Taos Co.: hwy 3 w of Tres Ritos, 01-Aug-76, Hutchins, R. 6449 (UNM); Sangre de Cristo Mts, 2.5 air mi nnw of Red River, 10500 ft, 17-Aug-73, Holmgren, N.H. 7257 (NMC); Lake Fork Trail, 10400 ft, 07-Aug-67, Mackay 184 (UNM); below Hematito Peak, 01-Aug-96, Atwood, D. 21117 (UNM); Kiowa Road 5 mi n of hwy 48, 1 mi e of Questa, 25-Jun-95, Hevron, B. 2334 (UNM); Hondo Canyon, 9500 ft, 08-Jul-67, Mackay 132 (UNM); La Sombra campground, 5 mi e of Taos, 20-Jun-61, Dixon 44 (UNM); hwy 150, w of Taos Ski Valley, 06-Jun-77, Hutchins, R. 6982 (UNM). Torrance Co.: along crest trail, Manzano Mts, e of Mosca Peak, 30-Jun-63, Bedker 1197 (UNM); Manzano Peak, 29-Jun-63, Bedker 1103 (UNM); Manzano Mts, near Tajique, 7500 ft, 28-Jul-62, Bedker 242 (UNM); Manzano Peak, 14-Jul-63, Bedker 880 (UNM). Union Co.: a few mi n of Clayton, 20-Jun-51, Clark, O.M. s.n. (UNM); Sierra Grande, 17-May-46, Hershey, A.L. 10952 (UNM); base of Capulin Mt, 20-Jun-51, Clark s.n. (UNM); Clayton, 01-Jun-1906, Bartlett, F. 213 (NMC); 13 mi n of Union-Quay county line on hwy 18, 28-May-73, Higgins, L.C. 6931 (NMC); Sierra Grande, 8000 ft, 02-Jul-76, Hubbard s.n. (UNM).

Vicia leucophaea

Catron Co.: Mogollon Mts, middle fork of the Gila River, 7000 ft, 05-Aug-00, Metcalfe, O.B. s.n. (NMC); Mogollon Mts, west fork of the Gila River, dry hills, 7500 ft, 05-Aug-03, Metcalfe, O.B. s.n. (NMC); Mogollon Mts, on Mogollon Creek, 8000 ft, 18-Jul-03, Metcalfe, O.B. 257 (NMC). Hidalgo Co.: Animas Mts, 7000 ft, 10-Apr-75, Wagner, W. 1725 (UNM); Animas Mts, 6600 ft, 22-Jul-75, Wagner, W. 1234 (UNM). Socorro Co.: San Mateo Mts, For. Rd. 330, 9330 ft, 27-Aug-78, Moir 469 (NMC).

Vicia ludoviciana

Bernalillo Co.: Sandia Mts, 20-Apr-70, Hutchins, R. 2833 (UNM). Colfax Co.: hwy 56 e of Springer, 05-Jun-77, Hutchins, R. 6950 (UNM). DeBaca Co.: hwy 20 s of Ft. Sumner, 13-May-78, Hutchins, R. 7391 (UNM); hwy 285, 15 mi nw of Mesa, 18-May-80, Hutchins, R. 8763 (UNM). Dona Ana Co.: Organ Mts, Van Patten's, 25-Apr-1895, Wooton, E.O. s.n. (NMC); Organ Mts, Bishop's Cap, 04-Apr-08, Wooton, E.O. 3805 (NMC); Organ Mts, Filmore Canyon, 25-Mar-08, Wooton, E.O. 3822 (NMC); White Sands Missile Range, Mineral Hill, 07-Apr-92, Anderson, D.L. 5466 (NMC); Organ Mts, 08-Apr-38, Heep s.n. (NMC); Organ Mts, 5000 ft, 30-Apr-1898, Wooton, E.O. s.n. (NMC); Organ Mts, Van Patten's, 25-Apr-1895, Wooton, E.O. s.n. (NMC); San Andres Mts, Black Mt, 5500 ft, 24-Mar-72, Todsen, T.K. s.n. (NMC); w base of Organ Mts, mouth of Dripping Springs Canyon, 6000 ft, 25-Apr-82, Ward, D. 8 (NMC); Organ Mts, Filmore Canyon, 15-Apr-1899, Wooton, E.O. s.n. (NMC); Organ Mts, Aquirre Springs Campground, 13-Apr-94, McIntosh, L. 2964 (NMC); College Ranch, 20-May-53, Dunn, D.B. s.n. (UNM); Aquirre Spring, 21-Apr-84, Hutchins, R. 11150 (UNM); St. Nicholas Canyon, San Andres Mts, , Andrew 26 (UNM); San Andres Mts, Ash Canyon, Lucero Tank, 22-May-75, Loh, V. 219 (UNM); Pena Blanca, 30-Mar-05, Wooton, E.O. s.n. (UNM); Dona Ana Mts, 4700 ft, 26-Mar-85, Allred, Kelly W. 2780 (NMCR). Eddy Co.: Los Medanos site, Livingston Ridge, 01-Mar-79, Knight, P. s.n. (UNM); Walnut Canyon, 05-Apr-56, McKechnie 457 (UNM). Grant Co.: 13.5 mi se of Hurley, 4900 ft, 29-Apr-73, Holmgren, N.H. 6979 (NMC); Mangas Springs, 18 mi nw of Silver City, 4770 ft, 28-Apr-03, Metcalfe, O.B. 38 (NMC); on open slope of hill just above small drainage containing Quercus, 5900 ft, 10-Apr-87, Columbus, J.

(Continued on page 5, Vicia)

Botany is the natural science that transmits the knowledge of plants.

— Linnaeus

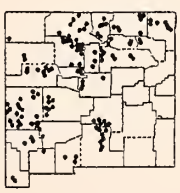
(Vicia, continued from page 4)
Travis 853 (NMCR); Gila Nat. For. w of Burro Mts, 09-May-84, Fletcher, R. 7592 (UNM). Harding Co.: 10 mi e of Mosquero on hwy 39, 29-May-73, Higgins, L.C. 6934 (NMC); Kiowa Nat. Grasslands, Canon Blanco, 5500 ft, 01-Jul-81, Ward, D. 239 (NMC); Canadian River Canyon, 29-Jun-81, Knight, P. 1585 (UNM). Hidalgo Co.: Black Mts, n end, about 5 mi e of Arizona line along U.S. hwy 70, 02-Apr-90, Porter (UNM); Guadalupe Canyon, 07-Apr-79, Spellenberg, R. 5059 (NMC); Animas Lake bed, 01-May-37, Hershey, A.L. 245 (NMC); Guadalupe Canyon, 09-May-44, Hershey, A.L. 10990 (UNM); Animas Mts, Indian Creek, 20-May-75, Wagner, W. 750 (UNM); Guadalupe Canyon, 15-Apr-62, Martin 5079 (UNM); Little Hatchet Mts, ne of Hachita Peak, 29-Mar-97, Worthington, R. 26216 (UNM): For. Rd. 63, Coronado Nat. For., 14-May-83, Hutchins, R. 10641 (UNM); San Luis Pass, 21-May-75, Wagner 833 (UNM); Guadalupe Canyon, 03-Apr-61, Jones s.n. (UNM). Lea Co.: 10 mi n of Hobbs on route 18, 21-Apr-54, Castetter 6683 (UNM). Lincoln Co.: Fort Stanton, 11-Jun-86, Allred, K.W. 3152 (NMCR); Fort Stanton, 05-Apr-81, Lebgue 476 (NMCR); Gray, 6000 ft, 25-May-1898, Skehan, J. 15 (NMC); White Mts, McBride's place, Little Creek, 18-Jan-1899, Turner 256 (NMC); near Gray, 6000 ft, , Skenhan, J. in 1898 (NMC); 5 mi nw of Corrizozo, 26-Apr-69, Hutchins, R. 1798 (UNM); White Mts, 04-Apr-70, Hutchins, R. 2796 (UNM); Bonita Lake, 20-Aug-68, Hutchins, R. 1495 (UNM); Three Rivers Campground, 04-Apr-70, Hutchins, R. 2794 (UNM). Luna Co.: Florida Mts, 4700 ft, 20-Apr-73, Holmgren, N.H. 6894 (NMC); Rock Hound State Park, ft, 07-Apr-77, Hutchins, R. 6734 (UNM); Rock Hound State Park, 08-Apr-77, Hutchins, R. 6772 (UNM); Florida Mts, 06-Apr-97, Worthington, R. 26282 (UNM); Florida Mts, Spring Canyon, ft, 10-Apr-91, Lightfoot 29 (UNM); near top of N-S ridge overlooking Cooke's Canyon, 5200 ft, 11-May-87, Columbus, J. Travis 1124 (NMCR); Goodsight Mts, 06-Apr-98, Hutchins, R. (UNM). Mora Co.: Vercere Canyon, 29-Jun-81, Fletcher, R. 5230 (UNM); Kiowa Nat. Grasslands w of Canadian River, 17-May-82, Fletcher, R. 6016 (UNM). Otero Co.: hwy 70, 5 mi w of Ruidoso, 17-Jul-77, Hutchins, R. 7117 (UNM); s side Cornudas Peak, 16-Apr-87, Knight, P. 3428 (UNM); hwy 82, 2 mi w of Mayhill, 05-Jul-77, Hutchins, R. 7084 (UNM); w slope White Mts, 02-May-70, Hutchins, R. 2857 (UNM); Cloudcroft, 29-Jul-31, Dunn, D.B. 7547 (UNM). Roosevelt Co.: Melrose Airforce Base, 06-May-93, Bleakly, D. 82 (UNM); Melrose Airforce Base, 22-Jun-93, Bleakly, D. 182 (UNM). San Juan Co.: Navajo Reservation, 4.5 mi sw of Shiprock Diatreme, 5640 ft, 28-Apr-01, Clifford, A. 175 (UNM). San Miguel Co.: Anton Chico Grant, 12-May-83, Fletcher, R. 6985 (UNM). Sandoval Co.: White Rock Canyon along Rio Grande, 14-May-88, Jacobs 4006 (UNM). Sierra Co.: Star Peak, 6500 ft, 28-Apr-05, Metcalfe, O.B. 1530 (NMC); Black Range, s of South Diamond Creek, 12-Aug-82, Fletcher, R. 6527 (UNM); Star Peak, 28-Apr-05, Metcalfe, O.B. 1530 (UNM). Socorro Co.: Jordan Canyon, Magdalena Mts, 11-May-75, Hutchins, R. 5453 (UNM); San Mateo Mts, Cibola National Forest, For. Rd. 138 along ridge, 3 mi n of jct For. Rd. 96, 25-Sep-02, Kelly W. Allred 8441 (NMCR); Sevilleta, McKensie Flat, 12-Aug-74, Kiger 127 (UNM); Magdalena Mts, Sawmill Canyon, 24-May-75, Hutchins, R. 5465 (UNM); Water Canyon, Magdalena Mts, 12-May-73, Hutchins, R. 4023 (UNM). Union Co.: Clayton, 20-Jun-51, Clark s.n. (UNM); Clayton, 20-Jun-51, Clark s.n. (UNM).

Vicia pulchella

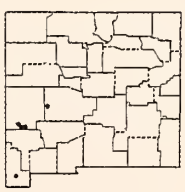
Catron Co.: East Diamond Canyon, Black Range, 12-Aug-82, Knight, P. 2238 (UNM); Mogollon Mts, Copper Creek, 20-Jul-84, Fletcher, R. 7710 (UNM); Datil Mts, 29-Aug-76, Fletcher, R. 1167 (UNM); Datil Mts, 31-Jul-76, Fletcher, R. 876 (UNM); Gila Nat. For., Blanca Canyon, 6800 ft, 26-Aug-15, Chapline, W. R. 333 (NMC); Mogollon Mts, Hall Canyon, 21-Jul-84, Dunbar 679 (UNM); Gila Nat. For., Indian Creek Canyon, 20 m of Mogollon, 8200 ft, 27-Aug-67, Hess, W. 1421 (NMC); McClure's Ranch, 6000 ft. 02-Aug-00, Wooton, E.O. s.n. (NMC); Mogollon Mts, Mogollon Creek, 8000 ft, 18-Jul-03, Metcalfe, O.B. 266 (NMC). Cibola Co.: sw end of Water Canyon, 23-Jul-60, Osborn 476 (UNM); Mt. Taylor, San Mateo Spring, 19-Jul-61, Osborn 718 (UNM); Upper Coal Mine Canyon, 23-Aug-60, Osborn 563 (UNM). Grant Co.: Twin Sisters Creek, n of Fort Bayard, 8000 ft, , Hubbard, C. 21 (NMC); Black Range, e of Santa Rita, 14-Aug-42, Clark 10366 (UNM); Mogollon Mts, Iron Creek, 7850 ft, 25-Jun-78, Moir, W. 101 (NMC); Black Range, e of Santa Rita, 15-Aug-42, Clark 10422 (UNM); Hillsboro Peak, 10000 ft, 25-Aug-04, Metcalfe, O.B. 1245 (NMC); 15-Aug-63, Turner 313 (UNM); Black Range, e of Santa Rita, 15-Aug-42, Clark 10422 (UNM); w of Emory Pass, 06-Sep-82, Hutchins, R. 10594 (UNM). Hidalgo Co.: Animas Peak foothills, 05-Sep-90, Ivey s.n. (UNM); Animas Mts, w fork Indian Creek, 06-Aug-76, Wagner, W. 2267 (UNM); Gray Ranch, Animas Mts, 15-Sep-90, Ivey 143 (UNM); Animas Mts, 04-Oct-75, Wagner 1794 (UNM). Lincoln Co.: White Mts, 7000 ft, 06-Aug-97, Wooton, E.O. 288 (NMC); Eagle Creek, 29-Aug-1899, Turner 224 (NMC); White Mts, 30-Jun-69, Hutchins, R. 2105 (UNM); White Mts, 5 mi w of Alto, 29-Jun-69, Hutchins, R. 2082 (UNM); Sierra Blanca, just e of the ski area, 24-Jun-73, Higgins, L.C. 7445 (NMC); s of Eagle Creek, White Mts, 18-Aug-69, Hutchins, R. 2481 (UNM); Rio Ruidoso Canyon, Sacramento Mts, 10-Aug-65, Bennett 8654 (UNM); White Mts, 01-Aug-1898, Townsend s.n. (NMC); White Mts, 7400 ft, 25-Aug-07, Wooton, E.O. & P.C. Standley (NMC); Mescalero Eagle Lakes, 21-Aug-76, Hutchins, R. 6574 (UNM); Bonita Lake, 20-Aug-68, Hutchins, R. 1513 (UNM); Eagle Creek, 16-Jul-77, Hutchins, R. 7109 (UNM); Sierra Blanca, 28-Aug-76, Wagner & Sabo 2524 (UNM); Fort Stanton, 25-Aug-81, Lebgue, T. 558 (NMCR); White Mts, 6300 ft, 26-Jul-1897, Wooton, E.O. 226 (NMC). Mora Co.: near Cowles, 9000 ft, 30-Aug-42, Hershey, A.L. 2309 (NMC); Above Cowles, 8600 ft, 31-Aug-42, Hershey, A.L. 2309 (NMC). Otero Co.: Sacramento Mts, Parson Mine, 17-Jul-91, Lightfoot 179 (UNM); 1 mi ne of Cloudcroft, 9000 ft, 29-Jul-51, Dunn, D.B. 7547 (NMC); White Mts, Mescalero Apache Reservation, 21-Jul-05, Wooton, E. O. s.n. (UNM); Sacramento Mts, Tularosa Creek, 18-Aug-1899, Wooton, E.O. s. n. (NMC); Cloudcroft, 30-Jun-1899, Wooton, E.O. s.n. (NMC). San Miguel Co.: Beulah, , Cockerell s.n. (UNM); 1 mi n of Terrero, 13-Jul-81, Hutchins, R. 9738 (UNM); Los Pinos Guest Ranch, Cowles, Sangre de Cristo Mts, at end of hwy 63 north from Pecos, upper montane mixed coniferous forest, 8000 ft, 03-Aug-95, Allred, K.W. s.n. (NMCR); Upper Pecos River, 27-Jul-1898, Maltby & Cayhill 108 (UNM); Sangre de Cristo Mts, hwy 63, 17-Aug-96, Atwood, D. 21448 (UNM); Pecos River Nat. For., Harvey's Upper Ranch, 9600 ft, 01-Aug-08, Standley, P.C. 4620 (NMC); Pecos River Nat. For., Gallinas Planting Station, 01-Jul-1908, Bartlett, W.H. Mrs. s.n. (NMC); Winsor's Ranch, 8400 ft, 16-Jul-08, Standley, P.C. 4364 (NMC). Sierra Co.: Taylor Peak, Black Range, 12-Aug-82, Hutchins, R. 10342 (UNM); Trail between Turkey Run Creek and Diamond Creek Valley. Dominated by Pinus, 11-Aug-93, Roalson, E.H. 621 (NMCR); Hoyt Creek, 8200 ft, 02-Sep-94, Roalson, E.H. 1028 (NMCR). Socorro Co.: s Baldy, Magdalena Mts, 15-Aug-76, Hutchins, R. 6535 (UNM); San Mateo Mts, Bear Trap Canyon, 30-Aug-75, Wagner 1320 (UNM); Magdalena Mts, 07-Apr-82, McIntosh, L. 941 (UNM); Bear Trap Canyon, San Mateo Mts, 27-Jul-60, CJ s.n. (UNM); Magdalena Mts, below Langmuir Laboratory, 10000 ft, 18-Aug-73, Spellenberg, R. 3587 (NMC); Mt. Withington, 11-Jul-52, 6684 (UNM); Water Canyon, 30-Jun-73, Hutchins, R. 4316 (UNM); hwy 59 e of Poverty Creek, 01-Sep-80, Hutchins, R. 9186 (UNM); Water Canyon, 27-Jul-75, Hutchins, R. 5584 (UNM); Water Canyon, 25-Aug-73, Hutchins, R. 4513 (UNM); Water Canyon, 25-Aug-73, Hutchins, R. 4711 (UNM); Bear Trap Canyon, San Mateo Mts, 19-Aug-68, Demaree, D. 59011 (UNM); San Mateo Mts, 04-Aug-01, Mygatt, J. 151 (UNM); Water Canyon, 13-Jul-74, Hutchins, R. 5055 (UNM).

Vicia villosa

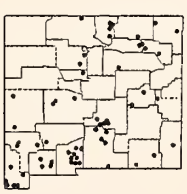
Colfax Co.: 11 mi e of Raton, 18-Jul-91, Hutchins, R. 13066 (UNM). Dona Ana Co.: College Farm, Las Cruces, 23-May-1893, Wooton, E.O. s.n. (NMC); College Farm, Las Cruces, 01-Jun-1895, Peacock, F. s.n. (NMC). San Miguel Co.:



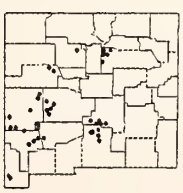
Vicia americana



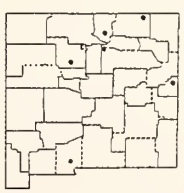
Vicia leucophaea



Vicia ludoviciana



Vicia pulchella



Vicia villosa

On the Trail of John Bigelow: A Clarification of Some New Mexico Type Localities

Robert Sivinski

New Mexico Forestry Division, P.O. Box 1948, Santa Fe, New Mexico 87504

ONE of several explorations for a transcontinental railway route in 1853 was lead by Lieutenant A.W. Whipple of the U.S. Army Corps of Topographical Engineers. The Whipple Expedition left Fort Smith, Arkansas in July of 1853 and terminated in Los Angeles, California in 1854. The official report of this expedition (Whipple 1857) makes interesting reading and can now be found on the internet at <http://lcweb2.loc.gov/ammem/ndlpcoop/moahtml/afk4383.html>. The surgeon and botanist for this survey was Dr. John Milton Bigelow. This was Bigelow's second trip across New Mexico, the first being the U.S./Mexico boundary survey in 1851. His biography has been published by Waller (1942), which is also available on the internet at <http://publications.ohiohistory.org/ohstemplate.cfm?action=toc&vol=51>. Bigelow made extensive collections of vascular and cryptogamic plants while the Whipple expedition traversed eastern and central New Mexico. Several of his specimens were of plants new to science and are now held as type specimens in eastern United States herbaria, most notably GH, NY, and US. As was often the case with early, fast-moving explorations through relatively uncharted territories, collection locations cited for Bigelow's specimens are sometimes vague. Some of his collection locations are at places where the survey crew simply made-up names that did not persist or used (and misused) provincial names that are no longer in use. Therefore, I have studied the itinerary of the Whipple Expedition to more precisely place some uncertain type localities of New Mexico plants.

Upon leaving the Canadian River Valley, the Whipple Expedition paralleled The Caprock and entered eastern New Mexico in late September 1853. They crossed the Canadian River divide and encamped at a creek that Whipple surmised was "the first affluence to the Pecos". They named it 'Hurrah Creek'. Bigelow made several collections that were labeled 'Hurrah Creek' including two that would later typify the names *Teloxys cornuta* Torrey [= *T. graveolens* (Wildenow) W.A. Weber] and *Machaeranthera angustifolia* Wooton & Standley [=*M. canescens* (Pursh) A. Gray var. *ambigua* B. Turner]. Hurrah Creek is not on any map of the region. A study of Whipple's itinerary and his description of the countryside, make it apparent the first creek they would encounter in the Rio Pecos basin would be Rito Esteros (Esteros Creek), which is a tributary of present-day Santa Rosa Reservoir on the Rio Pecos in northern Guadalupe County. Their subsequent northwest travel to Rio Gallinas was about a 15-20 mile trek, which reinforces my belief that Hurrah Creek is a superfluous name for Rito Esteros.

The expedition force divided at Anton Chico and Lt. Whipple took a few men (including Dr. Bigelow) up the Rio Pecos and across the river basin divide to Galisteo and the Rio Grande. En route, they camped at place on the Rio Pecos called 'La Cuesta', another ambiguous name. Bigelow collected a fern at this location that would become the type for *Notholena standleyi* Maxon. Whipple identified La Cuesta as a broad agricultural valley within a steep-walled canyon about 15 miles west-northwest of Anton Chico. This description and an attached drawing of the La Cuesta valley perfectly illustrate the Rio Pecos valley near the present-day settlement of Villa Nueva in western San Miguel County. Apparently, the name 'La Cuesta' did not persist at this location.

After reaching the Rio Grande at Santo Domingo, Whipple and Bigelow made their way to Albuquerque where they were reunited with the remainder of their group on 5 October 1883. Whipple and most of his staff stayed in Albuquerque for about a month to make local observations, take astronomical readings and make maps of the first leg of their journey from Fort Smith. Bigelow and expedition geologist, Jules Marcou, took this opportunity to explore the nearby Sandia Mountains (spelled 'Zandia' by Whipple). The season was well into autumn, yet Bigelow made numerous plant collections in this mountain range during the month of October, including twelve type specimens for new taxa. His camp was based in the little village he variously called 'Santa Antonita' or 'San Antonita'. This is an obvious misspelling by Bigelow since the Spanish diminutive of Saint Anthony (San Antonito) cannot take the feminine form 'Santa Antonita'. The Mexican War with General Santa Ana was the hottest news of the day, so Santa Antonita may have sounded all right to him. However, it was confusing to Paul Standley, who later attempted to list all significant New Mexico type localities (Standley 1910). Standley admits "I have not been able to locate this point definitely; I find no mention of it in Whipple's Report". The reason Santa Antonita is not found in the official report is simply because Bigelow and Whipple were separated while Bigelow was camped in the mountains. Santa Antonita is an erroneous reference to the community of San Antonito, which still exists on the lower eastern slope of the Sandia Mountains in northeastern Bernalillo County. This village was originally adjunct to the older community of San Antonio (5 miles south), which is now called Cedar Crest. Bigelow's specimens from this Sandia Mountain location include the types for *Actinella leptoclada* A. Gray [= *Tetraneuris argentea* (Torrey) Greene], *Thalictrum fendleri* Engelmann var. *polycarpum* Torrey [=*T. fendleri* var. *fendleri*], *Deweya acaulis* Torrey [=*Aletes acaulis* (Torrey) Coulter & Rose], and *Ligusticum scopulorum* A. Gray [=*Conioselinum scopulorum* (A. Gray) Coulter & Rose.].

The type for *Penstemon whippleanus* A. Gray is labeled "Camp B San Antonita, Sandia Mountains, Oct 10", which clearly links Bigelow's San(ta) Antonita location with this mountain range. Camp B probably refers to an overnight camp higher on the mountain. *Pedicularis procera* A. Gray is syntypified by a Bigelow specimen labeled "Sandia Mountains, Camp B. Douglass, aroyas, Oct 10" and the NY isotype of *Senecio bigelovii* A. Gray is also labeled "Camp B Douglas, Oct 10". The reference to "Douglas" is obscure, but may have been shorthand for Douglas spruce, which was the vernacular name Bigelow used in his report for *Abies douglasii* Lindley [= *Pseudotsuga menziesii* (Mirbel) Franco]. All three new species occur at the relatively high elevations of mixed conifer forest with *P. menziesii*. Amazingly, the type specimens for *Clematis bigelovii* Torrey, *Vilfa tricholepis* Torrey [=*Blepharoneron tricholepis* (Torrey) Nash], and *Gentiana bigelovii* A. Gray were also collected on October 10th and are clearly labeled "Sandia Mountains". Bigelow writes in his report that he reached the summit of Sandia Crest that day. I wonder if, while taking in the spectacular view from that 10,687-foot peak, he realized he had made western botany six species richer in a single day?

The Whipple Expedition left Albuquerque for western New Mexico in early November 1853. Autumn was too far advanced for Bigelow to make any additional New Mexican plant collections. However, Whipple's survey gives a much clearer location for the *Helianthus*

(Continued on page 7, Bigelow)

(Bigelow, Continued from page 6)

paradoxus Heiser paratype collection made by surgeon/naturalist Samuel Woodhouse during the 1851 Sitgreaves Expedition two years previous. Heiser (1958) made an apparent transcription error by citing the Woodhouse specimen label as "Nay Camp, Rio Laguna". Whipple followed in Sitgreaves footsteps along the Rio Laguna (correctly called Rio San Jose by Whipple) and writes about a place called 'Hay Camp'. I am sure that Nay Camp and Hay Camp are the same place. Whipple reached Hay Camp after passing within six miles of Mount Taylor and proceeding 11 miles up "a sinuous lava flow... in places broken, so as to allow the little brook to gush out from below and gurgle along by its side". At Hay Camp, the valley spreads out into a large vega of abundant grass, which Whipple says was occasionally cut to supply hay for military posts. His approach through the lava and description of a broadened valley clearly places Hay Camp at the present-day location of Grants in northern Cibola County. The rare *Helianthus paradoxus* still exists there to this day.

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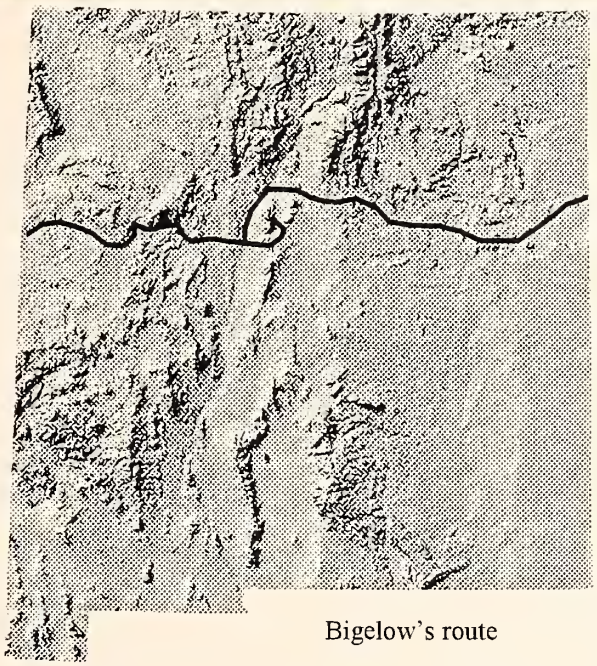

Bigelow's route

Plant Distribution Reports

New records and significant distribution reports for New Mexico plants should be documented by complete collection information and disposition of a specimen (herbarium). Exotic taxa are indicated by an asterisk (*).

— Kelly W. Allred [Department of Animal & Range Sciences, MSC Box 3-I, New Mexico State University, Las Cruces, NM 88003]

Lathyrus venosus** Muhlenberg ex Willdenow var. ***intonsus Butters & St. John (Fabaceae): Lincoln Co., Rio Bonito west of Bonito Lake, 27 June 1970, R. Hutchins 3035 (UNM). [The article on *Lathyrus* in the previous newsletter concluded that this species had perhaps escaped from hay or forage, but had failed to persist. This specimen speaks to the contrary; the species seems to have persisted in the Sacramento Mts since its first discovery there in 1899 by E.O. Wooton. We now have specimens from 1899, 1936, 1949, and 1970, all from the same general region, but from different sites. I still consider the species to be exotic in NM, however.]

Cladium californicum (S. Watson) O'Neill (Cyperaceae). This was reported for New Mexico by Wooton & Standley (1915, as the closely related *C. jamaicense* Crantz, a species of mostly coastal marshes), and repeated by Martin & Hutchins (1980). In the recent volume of Flora North America (vol. 23, Cyperaceae), however, Gordon Tucker omits this or any other species of *Cladium* from the state. To verify its occurrence, I offer the following documentation, courtesy of Jane Mygatt (UNM): Doña Ana Co.: San Andres Mts, Ash Canyon, 19 Aug 1950, R.J. Fleetwood s.n. (UNM). Eddy Co.: Guadalupe Mts, Big Canyon, 29 Aug 1991, R. Sivinski 1800 (UNM); Guadalupe Mts, below Sitting Bull Falls, 13 June 1975, T. Manthey & W. Wagner 920 (UNM). Otero Co.: Sacramento Mts, Lower Dog Canyon, 14 May 1978, R. Fletcher & W. Haggren 606 (UNM); Sacramento Mts, Dog Canyon, 5 June 1955, E.F. Castetter 8146 (UNM).

— Richard Worthington [P.O. Box 13331, El Paso, TX 79913]

Carex chihuahuensis Mack. (Cyperaceae): Hidalgo Co., Peloncillo Mts., Coronado Natl. Forest., along Cloverdale Creek about 1 mi. SE of the Pendleton Ranch House (T33S, R21W, Sec 16, NW1/4) 5350 ft. 17 may 1986, R. D. Worthington 14086 (UTEP, COLO, UNM).

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Kelly Allred

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Number 27 April 1, 2003

A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University.

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- Notices 6

ANNOTATED CHECKLIST OF THE GENUS *ALLIUM* (LILIACEAE) IN NEW MEXICO

Robert C. Sivinski

New Mexico Forestry Division. P.O. Box 1948, Santa Fe. New Mexico 87504

Reprinted from New Mexico Naturalist Notes 1(1):43-56. 1998

The genus *Allium* is distributed throughout the state of New Mexico and represented by thirteen distinct taxa. Most are widespread species, but several are rare here or reach a distribution limit just inside the New Mexico borders. Marion Ownbey produced comprehensive studies of the genus *Allium* for the adjacent states of Arizona and Texas (1947, 1950 respectively). In his Arizona study, Ownbey (1947) says the species are well marked and "No careful student should experience difficulty in determining them easily and accurately". Yet my recent review of the same species in New Mexican herbaria found an unusually high percentage of inaccurate specimen determinations. Therefore, the following taxonomic key and checklist annotations are offered as aids for identification of New Mexican wild onions. Complete species descriptions are not reiterated here and can be found in the above Ownbey references.

Three *Allium* species are added since the publication of the most recent state flora (Martin and Hutchins, 1980). In addition, the county distributions and some of the names used by Martin and Hutchins (1980) are corrected. A verified, representative specimen from herbarium collections at the University of New Mexico (UNM), New Mexico State University (NMC), or Southwestern New Mexico University (SNM) is cited for each county occurrence. Synonymy is only listed for those names that differ from the present treatment, but were accepted by Wooton and Standley (1913), Ownbey (1947, 1950), or Martin and Hutchins (1980).

KEY AND CHECKLIST OF *ALLIUM* IN NEW MEXICO

1 Outer bulb coat persisting as a conspicuous reticulum of coarse, anastomosing fibers; rhizomes lacking
  2 Bracts of the involucre 2- to 5-nerved (occasionally coalescent into what appears to be a single wide nerve in *A. macropetalum*)
    3 Ovary conspicuously crested with 3 pairs of short, flat projections; leaves usually 2 per scape; a desert and plains species of western and central NM.....*A. **macropetalum***
    3 Ovary crestless; leaves usually 3 per scape; a desert and plains species of eastern NM.....*A. **perdulce***
  2 Bracts of involucre mostly 1-nerved
    4 Perianth spreading-rotate; epidermal cells of inner bulb coats (under outer reticulum)intricately contorted; portions of outer bulb coat fused into irregular, solid pieces except along the ragged top and bottom edges of the bulb; common on hills and plains of southeastern NM.....*A. **drummondii***
    4 Perianth urceolate; epidermal cells of the innermost bulb coats rectangular and vertically elongate: entire outer bulb coat a reticulate fabric of coarse fibers with open interstices
      5 Leaves usually 2 per scape; spring flowering; rare in northwestern and northeastern NM.....*A. **textile***
      5 Leaves usually 3 or more per scape; summer flowering; widespread
        6 Umbel wholly floriferous; flowers fertile; widespread in most NM mountain ranges.....*A. **geyeri*** var. ***geyeri***

(Continued on page 2, Allium)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.

— Linnaeus

(Allium, continued from page 1)

6 Most of the flowers replaced by bulbils; remaining flowers sterile; scattered in several western and northern NM mountain ranges..... ***A. geyeri*** var. ***tenerum***

1 Outer bulb coat without fibers or with parallel fibers, never fibrous reticulate; with or without rhizomes

7 Bulbs attached to stout, dark, *Iris*-like rhizomes; leaves flat, strap-shaped, 5-10 mm wide; mountains in western and south-central NM..... ***A. gooddingii***

7 Bulbs with or without rhizomes, if rhizomes present, then slender and pale; leaves linear-channeled or broadly u-shaped in cross section, usually <5 mm wide, (occasionally flat and >5 mm wide in *A. cernuum*)

8 Umbel nodding from a decurved bend in the scape below the involucral bracts; tepals obtuse; stamens exserted from corolla; in all NM mountain ranges and on northeastern plains ..... ***A cernuum***

8 Umbel erect; perianth segments acute or acuminate; stamens shorter than the perianth segments

9 Inner whorl of perianth segments long acuminate with recurved tips, margins minutely serrulate-dentate; outer segments similar, but conspicuously broader and usually entire; outer bulb coat cells relatively square with thick walls (waffle-like); rare in western NM..... ***A. acuminatum***

9 Inner and outer whorls of perianth segments entire and not conspicuously wider or narrower; other characters never combined as above

10 Ovary and capsule conspicuously crested

11 Scape usually <10 cm tall; perianth 8-14 mm long; lacking rhizomes; outer bulb coats dark brown, cells elongating vertically: a desert species of southwestern NM..... ***A. bigelovii***

11 Scape taller (10-30 cm); perianth segments 6-10 mm long; proliferating from slender rhizomes at the base of the bulb; outer bulb coats grayish, cells elongating horizontally; rare in the mountains of western NM..... ***A. bisceptrum***

10 Ovary and capsule not crested

12 Bulb subspherical, often (not always) proliferating from the base by slender, scaled rhizomes; corolla campanulate-spreading; tepals white (often drying pinkish) with a dark red-purple midrib on outer surface; anthers red-purple (drying brown); igneous ridges and canyons in southwestern NM..... ***A. rhizomatum***

12 Bulb ovoid, without rhizomes; corolla spreading-rotate; tepals white to pale pink (drying pink), outer midrib absent or vague; anthers yellow; calcareous ridges and canyons in southern NM..... ***A. kunthii***

ALLIUM ACUMINATUM Hooker, Fl. Boreali-Amer. 2:184. 1838.

A common species of the western U.S. that barely enters the New Mexico borders from southwestern Colorado and eastern Arizona. It occurs on relatively arid soils at elevations up to piñon-juniper woodland. This small onion is readily distinguished by its bright reddish-purple flowers with minutely serrulate petals (use a hand lens) that spread outward at the tips and are narrower than the outer perianth whorl. The small, smooth bulb is spherical and the outer bulb coat cells are nearly square with thick walls (like a waffle pattern). Its leaves are withered by the time the plant is in full flower.

REPRESENTATIVE SPECIMENS: **Hidalgo Co.**: Black Mountain, 5 miles NE of Virden, 6 Apr 1986, *R. Spellenberg et al. 8409* (NMC); **Rio Arriba Co.**: Turkey Creek, Carson National Forest, 27 May 1987, *P. Knight 3501* (UNM); **San Juan Co.**: Middle Mesa near Navajo Reservoir, 14 May 1992, *Sivinski 1851* (UNM).

ALLIUM BIGELOVII S. Watson, King U.S. Geol. Expl. 40th Par. 5:487. 1871.

Although short in stature, this spring-flowering, desert species produces large, colorful umbels that are worthy of cultivation. Live plants have a distinctive corolla coloration (inner perianth segments white to pale pink with red tips and outer segments white to pale pink with red midribs) that cannot be confused with any other New Mexican *Allium*. Dried specimens of *A. bigelovii*, however, can be faded or have red tips and midribs on all tepals. Other species can also dry with red-tipped tepals. It can only be confused with *A. bisceptrum*, which is easily distinguished by its slender rhizomes, horizontally elongate bulb coat cells, and taller scape. The bulb coat cells of *A. bigelovii* are often elongated vertically and many of the squarish cells have contorted (zig-zagged) cell walls. *Allium bigelovii* is occasionally abundant in igneous, gravelly soils on the foot-slopes of desert mountains and hills in southwestern New Mexico and adjacent Arizona.

REPRESENTATIVE SPECIMENS: **Doña Ana Co.**: Sierra de las Uvas, 13 Apr 1985, *T. Todsen 8507-1* (NMC); **Grant Co.**: near Faywood Hotspring, 20 Apr 1993, *Sivinski 2080* (UNM); **Luna Co.**: east foot-slope of Florida Mts., 10 Apr 1991, *Sivinski 1631* (UNM).

ALLIUM BISCEPTRUM S. Watson, King U.S. Geol. Expl. 40th Par. 5:351. 1871

Allium palmeri S. Watson, King U.S. Geol. Expl. 40th Par. 5:487. 1871

Allium bisceptrum var. *palmeri* (S. Watson) Cronquist, Intermountain Flora 6:515. 1977.

This wild onion is very rare here, having been seen only a few times in the Zuni Mountains of west-central New Mexico and once in the southwest corner of the state near the Mexico border. It has ovary crests like *A. bigelovii*, but its slender rhizomes, horizontally elongate bulb coat cells, and taller scape readily distinguish it from that species. The flowers of *A. bisceptrum* are also smaller and evenly colored pink-lavender when fresh. However, dried specimens may have pink-tipped tepals like *A. bigelovii* and often lack rhizomes, if the plant was not carefully collected.

The *palmeri* form of this plant has been distinguished from *bisceptrum* by possessing rhizomes and a tetraploid level of chromosomes. The two taxa, however, cannot be consistently distinguished and only *bisceptrum* will be accepted for the up-coming *Flora of North America* treatment (Dale McNeal, Univ. of the Pacific, pers. comm.).

REPRESENTATIVE SPECIMENS: **Cibola Co.**: Cebolla Creek, Zuni Mts., 13 Jun 1981, *A. McCallum 1096* (UNM); **Hidalgo Co.**: San Luis Pass, 13 May 1955, *E. Castetter 7586* (UNM); **McKinley Co.**: Nutria Canyon, Zuni Mts., 3

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(*Allium*, continued from page 2)

Jun 1988, *R. Spellenberg et al. 9506* (NMC).

ALLIUM CERNUUM Roth, Roemer, Archiv. Bot. (Leipzig) 1(3):40. 1798.

Allium cernuun var. *neomexicanum* (Rydberg) Macbride, Gray Herb. Contrib. N.S., No. 56, p. 5. 1918.

Allium cernuum var. *obtusum* Cockerell *ex* Macbride, Gray Herb. Contrib. N.S., No. 56, p. 5. 1918.

Allium neomexicanum Rydberg, Bull. Torrey Bot. Club 26:541. 1899.

Allium recurvatum Rydberg, Mem. N.Y. Bot. Gard. 1:94. 1900.

This is the most common wild onion in New Mexico, occurring in all of our mountain ranges. Its nodding umbel, and exserted stamens make it the easiest to accurately identify. Usually, it is a montane forest species, but also occasionally is found at lower elevations in piñon-juniper woodland or the high prairies in the northeastern part of the state.

Although unique, this is a very variable species. Two weak, geographically overlapping varieties have been recognized in New Mexico (Martin and Hutchins 1980). *Allium cernuum* var. *neomexicanum* (Rydberg) Macbride supposedly is distinguish by thin, nearly flat leaves which are broader than the narrow, thick, channeled leaves of *A cernuum* var. *obtusum* Cockerell *ex* Macbride. Also the inner bulb coats of var. *obtusum* are supposed to be redder than the white to pale pink bulb coats of var. *neomexicanum*. However, the leaf characteristics grade into one another and are not reliably diagnostic. White or dark pink bulb coats can be found on adjacent plants within the same population and on most leaf forms. These infraspecific distinctions for *A. cernuum* are not made here because they overlap and are indistinguishable in much of New Mexico.

REPRESENTATIVE SPECIMENS: **Bernalillo Co.**: Tree Springs, Sandia Mts., 7 Sep 1965, *C. Bronson 7* (UNM); **Catron Co.**: Madre Mt., Datil Range, 23 Jul 1957, *E. Fleharty 40* (UNM); **Cibola Co.**: Zuni Canyon, Zuni Mts., 10 Aug 1968, *N. Riffle 596* (UNM); **Colfax Co.**: Johnson Mesa, 28 Aug 1967, *C. Jones 92* (UNM); **Doña Ana Co.**: Organ Mts., 17 Sep 1893, *E. Wooton s.n.* (NMC); **Eddy Co.**: Gunsight Canyon, Guadalupe Mts., 15 Sep 1982, *P. Knight 2360* (UNM); **Grant Co.**: east of Santa Rita in Black Range, 16 Aug 1942, *O. Clark 10512* (UNM); **Harding Co.**: Mills Canyon, 19 Sep 1994, *Sivinski & Lowrey 2879* (UNM); **Hidalgo Co.**: upper Indian Creek, Animas Mts., 13 Sep 1975, *W. Wagner 1557* (UNM); **Lincoln Co.**: North Fork Eagle Creek, White Mts., 22 Jul 1981, *D. Ward 81-423* (NMC; Cytological Voucher n=7); **Los Alamos Co.**: Water Canyon, Jemez Mts., 2 Aug 1978, *Tierney & Fox 22* (UNM); **McKinley Co.**: south of Fort Wingate Village, Zuni Mts, 13 Aug 1981, *Ward & Spellenberg 81-493* (NMC; Cytological Voucher n=7); **Mora Co.**: Las Feberas Canyon near Ocate, 15 Jul 1976, *J. Calvert 73* (UNM); **Otero Co.**: NW of Mayhill, 13 Aug 1949, *Gordon & Norris 575* (UNM); **Rio Arriba Co.**: Navajo Canyon SW of Canjilon, 13 Aug 1963, *K. Goodrow 697* (UNM); **Sandoval Co.**: North Sandia Peak, 7 Aug 1995, *Sivinski 3171* (UNM); **San Miguel Co.**: Los Trigos Canyon near Pecos, 21 Jul 1993, *Sivinski 2439* (UNM); **Santa Fe Co.**: Upper Glorieta Creek, 14 Jul 1993, *Sivinski 2395* (UNM); **Sierra Co.**: Kingston, 13 Sep 1904, *O. Metcalfe 1370* (NMC, UNM); **Socorro Co.**: 1 mile west of Trinity Crater, 28 Aug 1948, *D. Dunn 4647* (UNM); **Taos Co.**: Hondo Canyon, Sangre de Cristo Mts., 12 Aug 1967, *H. Mackay 6T-34* (UNM); **Torrance Co.**: Trigo Canyon, Manzano Mts., 2 Sep 1963, *E. Bedker 1546* (UNM); **Union Co.**: Sierra Grande near Des Moines, 3 Sep 1963, *E. Castetter 20105* (UNM).

ALLIUM DRUMMONDII Regel, Acta Horti Petropolitani 3:112. 1875.

Allium helleri Small, Fl. Southeast U.S. pg. 264. 1903

Allium nuttallii S. Watson, Proc. Amer. Acad. 14:227. 1879.

This wild onion is fairly common in the hills and plains of southeastern New Mexico from piñon-juniper woodland down to Chihuahuan Desert grasslands. It is distinctive among the New Mexican species with fibrous outer bulb coats. Portions of its light reddish-brown outer coat are fused into solid pieces that have no openings between fibers except at the ragged edges around the top and bottom of the bulb. The other fibrous-coated species have an outer bulb coat fabric with open interstices between the fibers. The contorted bends and turns of the epidermal cell walls on the inner bulb coats of *A. drummondii* is a unique diagnostic feature. However, this feature has limited value since the innermost epidermal layers are difficult to find on dried specimens without damaging the outer bulb coat. The most obvious characteristics of *A. drummondii* are its unique outer bulb coat and spreading-rotate corolla.

In the field, *A. drummondii* is also distinguishable by inflorescence characteristics from other spring-flowering species in that region of the state. The narrowly urceolate flowers of *A. perdulce* sharply contrast with the campanulate to spreading corolla of *A. drummondii*. *Allium macropetalum* is easily differentiated by its multiple-nerved bracts and crested capsules, but also is not expected to occur in southeastern New Mexico.

REPRESENTATIVE SPECIMENS: **Eddy Co.**: lower Rocky Arroyo, Guadalupe Mts., 20 Apr 1992, *Sivinski 1822* (NMC, UNM); **Lea Co.**: plains north of Arkansas Junction, 24 Apr 1992, *Sivinski 1831* (NMC, UNM); **Otero Co.**: Brokeoff Mts., 17 Apr 1990, *Sivinski 1365* (UNM).

ALLIUM GEYERI S. Watson var. ***GEYERI***, Proc. Amer. Acad. 14:227. 1879.

A common species that is frequently encountered in most New Mexico mountain ranges from moist alpine meadows down to drier piñon-juniper woodlands. The lower elevation populations usually occur on unusual soils such as sandy gypsum or shale. *Allium geyeri* distinguishes itself from other fibrous bulb coat species by its relatively slender pedicles and absence of dark midribs on the tepals. It is highly variable in stature and its ovaries can be moderately crested to nearly crestless in fruit. The corolla is always urceolate, but varies in size and from white to bright pink.

While morphologically distinct, *A. geyeri* is most easily separated from other related species by its higher elevation habitats and later flowering season. All other fibrous bulb coat species in New Mexico are spring-bloomers that are in fruit by the end of May, while *A. geyeri* does not begin blooming until mid-June.

REPRESENTATIVE SPECIMENS: **Bernalillo Co.**: Sandia Mts., 8 Jul 1931, *E. Castetter 2031* (UNM); **Catron Co.**: Salvador Spring, Mangus Mts., 14 Jul 1991, *Sivinski 1745* (UNM); **Cibola Co.**: 4 miles south of Prewitt, 12 Jun 1997, *Sivinski 3795* (UNM); **Colfax Co.**: Chicorica Canyon, 27 Jun 1974, *L. Higgins 8863* (NMC); **Doña Ana Co.**: Van Patten's, Organ Mts., 10 Sep 1899, *E. Wooton s.n.* (NMC); **Grant Co.**: Little Bear Mt., 10 Sep 1980, *R. Fletcher 4942* (UNM); **Lincoln Co.**: Sierra Blanca Ski Area, 9 Jul 1977, *S.*

(*Continued on page 4, Allium*)

(*Allium, continued from page 3*)

Cox 644 (UNM); **McKinley Co.**: Dalton Pass, 18 Aug 1976, *W. Wagner 2426* (UNM); **Otero Co.**: Fresnal Canyon, Sacramento Mts., 22 Jul 1981, *D. Ward 81-417* (NMC, NY, RSA; Cytological Voucher n=7); **Rio Arriba Co.**: SW of Tres Piedras, 24 Jul 1991, *Sivinski 1753* (UNM); **Sandoval Co.**: North Sandia Peak, 7 Aug 1995, *Sivinski 3186* (UNM); **San Miguel Co.**: upper Pecos watershed in Dalton Canyon, 28 Jun 1991, *Sivinski 1732* (UNM); **Santa Fe Co.**: Santa Fe Baldy, Sangre de Cristo Mts., 17 Jul 1997, *Sivinski 3883* (UNM); **Sierra Co.**: Hillsboro Peak, 24 Jun 1904, *O. Metcalfe 1185* (NMC); **Socorro Co.**: Hoot Owl Canyon, Chupadera Mesa, 22 Aug 1990, *Sivinski 1572* (UNM); **Taos Co.**: Twining Canyon, Wheeler Peak, 7 Aug 1949, *Gordon & Norris 327* (UNM); **Torrance Co.**: Mosca Peak, Manzano Mts., 23 Oct 1963, *E. Bedker 1346* (UNM); **Union Co.**: Sierra Grande, 30 Jun 1976, *J. Hubbard s.n.* (UNM).

ALLIUM GEYERI var. *TENERUM* M.E. Jones, Contr. West. Bot. 10:28. 1902.

Allium rubrum Osterhout, Bull. Torrey Bot. Club 27:506. 1900.

Allium sabulicola Osterhout, Bull. Torrey Bot. Club 27:506. 1900.

A sporadic, asexual variation of *A. geyeri* that replaces most of its flowers with bulbils. The few flowers that are produced in the umbel always appear to be sterile, at least in New Mexico populations. Variation *tenerum* frequently occurs in boggy areas that are generally wetter habitats than those occupied by var. *geyeri*.

REPRESENTATIVE SPECIMENS: **Catron Co.**: Indian Creek Canyon, Mogollon Mts., 27 Aug 1967, *W. Hess 1404* (SNM); **Mora Co.**: west of Santa Barbara Peak, Sangre de Cristo Mts., 15 Jul 1982, *T. Andrews 199C13* (UNM); **Rio Arriba Co.**: Brazos River Box, 3 Jul 1991, *Sivinski 1733* (UNM); **San Miguel Co.**: Panchuela Creek near Cowles, 5 Jul 1931, *A. Nelson 2047* (UNM); **Taos Co.**: East Fork of Red River, 5 Aug 1982, *R. Fletcher 4732* (UNM).

ALLIUM GOODDINGII M. Ownbey, Res. Stud. State College Wash. 15:222. 1947.

This is a tall, beautiful onion with reddish-purple flowers. It is distinctive for its thick, *Iris*-like rhizomes and wide, flat leaves. It is usually a montane forest species that occurs on moist soils along streams and in small shaded drainages from ponderosa pine to spruce-fir forest elevations. There are several populations of this onion in the Mogollon Mountains of southwestern New Mexico and the adjacent White Mountains of southeastern Arizona. A disjunct population occurs in the alpine meadows of Sierra Blanca Peak in the White Mountains of south-central New Mexico. This population was misidentified in the New Mexico Flora (Martin and Hutchins 1980) as *A. brevistylum* which is a related montane species from Colorado and northward. The Chuska Mountains of northwestern New Mexico and adjacent Arizona also contain a few scattered populations of *A. gooddingii*.

REPRESENTATIVE SPECIMENS: **Catron Co.**: upper Indian Creek drainage, Mogollon Mts., 31 Aug 1980, *Spellenberg & Soreng 5848* (NMC); **Lincoln Co.**: South Fork of Rio Bonito, White Mts., 23 Aug 1985, *R. Fletcher 8347* (UNM); **McKinley Co.**: Little Water Creek, Chuska Mts., 11 Jul 1995, *D. Hevron et al. 2360* (NMC, UNM); **Otero Co.**: Sierra Blanca in glacial cirque, 16 Aug 1980, *R. Worthington 6341* (UNM); **San Juan Co.**: SE of Crystal, Chuska Mts, 26 Jul 1995, *B. Hevron 2398* (NMC, UNM).

ALLIUM KUNTHII G. Don. Mem. Wernerian Soc. 6:82. 1827.

Allium scaposum Bentham, Pl. Hartweg., pg. 26. 1840.

Although sporadic in distribution, rather large populations of this wild onion inhabit some of the desert mountain ranges in southern New Mexico. It appears to be restricted to calcareous outcrops (limestone or limy sandstone) and most frequent in the southeastern part of the state. It usually occurs at elevations with piñon-juniper woodland. In New Mexico, the white to pale pink flowers open for about a week during August.

This is a relatively tall plant (usually 20-50 cm) and is often confused with *A. rhizomatum* which also lacks ovary crests and is sometimes tall. The flowers of *A. kunthii* are more rotate-spreading, lack red outer midribs on the tepals, and have yellow anthers compared to the reddish anthers, red-purple midribs on the tepal backs, and spreading-campanulate corollas of *A. rhizomatum*. The pedicles of *A. kunthii* are shorter and more slender resulting in an umbel with a somewhat capitate appearance. *Allium kunthii* always lacks rhizomes and has a more elongated bulb that is rarely vertical and often nearly horizontal in the soil. The bulb of *A. rhizomatum* is nearly spherical and frequently has a thin, scaly rhizome at the base.

REPRESENTATIVE SPECIMENS: **Doña Ana Co.**: upper Ash Canyon, San Andres Mts., 12 Aug 1975, *J. Von Loh 520* (UNM); **Eddy Co.**: Black Canyon, Guadalupe Mts., 28 Aug 1991, *Sivinski 1793* (UNM); **Hidalgo Co.**: Thompson Canyon, Big Hatchet Mts., 17 Aug 1976, *J. Cook 143* (SNM); **Otero Co.**: Fresnal Canyon, Sacramento Mts., 14 Aug 1991, *Sivinski 1785* (NMC, UNM).

ALLIUM MACROPETALUM Rydberg, Bull. Torrey Bot. Club 31:401. 1904.

Allium deserticola (M.E. Jones) Wooton & Standley, Contr. U.S. Nat. Herb. 16:114. 1913.

This is the most widespread and common species of our arid-land wild onions. It occurs throughout western and central New Mexico in gravelly or sandy soils generally at elevations below piñon-juniper woodland. This is a spring-blooming, fibrous bulb coat species that, in New Mexico, can only be confused with *A. textile* where their ranges overlap in northwestern part of the state. Both have fibrous bulb coats and usually two leaves per scape. *Allium macropetalum* is distinguished by its multiple-nerved bracts and strongly crested ovary becoming three pairs of flattened projections at the top of the capsule. *Allium textile* has mostly single-nerved bracts and the ovary is often crestless or may develop three small (sometimes bifid) processes at the top of the capsule. Although their ranges are not expected to overlap in New Mexico, *A. perdulce* is differentiated by its crestless ovary, tightly urceolate corolla, and greater tendency to produce three leaves per scape.

Magnification may be needed to assess bract venation because *A*

(*Continued on page 5, Allium*)

Botany is the natural science that transmits the knowledge of plants.

— Linnaeus

(Allium, continued from page 4)

macropetalum can occasionally have bract nerves that coalesce into what appears to be a single wide nerve. The size and shape of the corolla are also variable. Most New Mexico populations have spreading-campanulate corollas, but several scattered locations have plants have with relatively smaller, narrow corollas. The tepals always have dark midribs, but general flower color varies from white to pale pink.

REPRESENTATIVE SPECIMENS: **Bernalillo Co.**: foothills of Sandia Mts., 6 May 1977, *Wagner & Sabo 2831* (UNM); **Catron Co.**: near Glenwood, 14 May 1960, *W. Martin 4069* (UNM); **Doña Ana Co.**: Soledad Canyon, Organ Mts., 8 Apr 1981, *Spellenberg & Singer 5956* (NMC; Cytological Voucher n=7); **Grant Co.**: slopes above Faywood Cienega, 20 Apr 1993, *Spellenberg & Brouillet 11785* (NMC); **Hidalgo Co.**: lower Indian Creek, Animas Mts., *W. Wagner 564* (UNM); **Lincoln Co.**: Three Rivers Campground, White Mountains, 2 May 1970, *Hutchins 2885* (UNM); **Los Alamos Co.**: mesa between Water and Ancho Canyons, 31 May 1978, *Tierney & Foxx 12* (UNM); **Luna Co.**: near Deming, 27 Apr 1937, *Nielson 15* (UNM); **McKinley Co.**: Crownpoint, 17 May 1977, *W. Wagner 2942* (UNM); **Rio Arriba Co.**: 3 miles west of Medanales, 7 May 1997, *Sivinski 3648* (UNM); **Sandoval Co.**: west of San Ysidro, 13 May 1993, *Sivinski 2138* (UNM); **San Juan Co.**: near Archuleta, 8 May 1995, *Sivinski 2977* (UNM); **Sierra Co.**: 23 miles north of Truth or Consequences, 11 Apr 1995, *Sivinski 2929* (UNM); **Socorro Co.**: Chupadera Mesa, 21 Apr 1987, *P. Knight 3432* (UNM).

ALLIUM PERDULCE S.V. Fraser, Trans. Kansas Acad. Sci. 42:124. 1939.

This is the most common spring-blooming species on the desert and grassland plains of eastern New Mexico. It is distinguished from other fibrous bulb coat species by the combined characteristics of urceolate corolla, crestless ovary, multiple-nerved bracts, and usually three leaves per scape. The outer bulb coat fabric of this species is especially thick compared to other fibrous-coated onions in the state. It is also the only New Mexican wild onion with fragrant flowers, however, the sweet odor is sometimes difficult to detect. In northeastern New Mexico it is most likely to be confused with *A. textile* which is separated by its single-nerved bracts and usually fewer (2) leaves per scape. *Allium perdulce* also resembles *A. macropetalum*, but that species has ovary crests, usually two leaves per scape, and is not expected to occur in the eastern part of the state.

The variability within this species led Ownbey (1950) to describe *A. perdulce* var. *sperryi* M. Ownbey as a Texas Trans-Pecos endemic with white or pale pink perianth and nearly odorless flowers. Variety *perdulce* is supposed to have darker pink flowers with strong hyacinth-like fragrance. The populations of *A. perdulce* in eastern New Mexico have white to pale pink tepals (drying pink or violet) with reddish midribs which could easily be placed within variety *sperryi*. The only strongly scented plants I recall were in Eddy County, but these also had white tepals. Apparently, the distribution and demarcation of varieties *perdulce* and *sperryi* needs further study and less ambiguous circumscription.

REPRESENTATIVE SPECIMENS: **Chaves Co.**: Mescalero Ridge near Cedar Point, 22 Apr 1973, *N. Holmgren 6930* (NY, NMC, UNM); **Eddy Co.**: 15 miles NE of Carlsbad, 22 Mar 1995, *Sivinski 2927* (UNM); **Guadalupe Co.**: 7 mi SE of Vaughn, 18 May 1980, *Hutchins 8782* (UNM); **Harding Co.**: 6 miles SW of Yates, 27 Apr 1992, *Sivinski 1835* (UNM); **Roosevelt Co.**: Melrose Bombing Range, 26 Apr 1991, *Barlow et al. 19* (UNM); **San Miguel Co.**: El Pueblo Section of Santa Fe National Forest, 20 Apr 1965, *F. Broeske LI-31* (UNM); **Union Co.**: west of Grenville, 29 Apr 1992, *Sivinski 1842* (UNM).

ALLIUM RHIZOMATUM Wooton & Standley, Contr. U.S. Nat. Herb. 16:114. 1913.

Allium glandulosum sensu Ownbey, non Link & Otto.

The type locality of this species is the vicinity of Gila Hot Springs. It is fairly frequent on igneous soils in the mountains of southwestern New Mexico at medium elevations with ponderosa pine forest down to piñon-juniper-oak woodlands. This wild onion blooms in the late summer and can only be confused with *A. kunthii*. The distinctions between these two species are discussed under *A. kunthii*. Ownbey (1947) assigned *A. rhizomatum (glandulosum)* to "meadows and moister habitats," but this is not always the case in New Mexico where it occasionally occupies relatively dry ridges and pockets of sandy soil on rock outcrops.

Allium rhizomatum belongs to a highly variable group of mainly Mexican plants with complex and confusing nomenclature. Hamilton Traub (1967, 1968) caused much of this confusion by naming more than a dozen new species in Mexico, and only offering vague descriptions of their delimiting characteristics and distributions. He did, however, convincingly separate *A. rhizomatum* from *A. glandulosum*.

There are two distinctive forms of *rhizomatum*-like onions in southwestern New Mexico. The type collection represents the common form in the Black Range/Mogollon region that has rhizomes and is relatively fewer-flowered, slender, and usually shorter. Some *A. rhizomatum* specimen sheets from this area may lack evident rhizomes because they were not carefully collected and the rhizomes were broken off in the soil. The other form is represented in Hidalgo County and has a relatively greater number of flowers per umbel, is more robust, and lacks evident rhizomes. For instance, I am unable to locate any bulbs with rhizomes from *rhizomatum*-like plants in the Animas and Peloncillo Mountains no matter how frequently and carefully I dig them up. I can find no alternate name for these Hidalgo County plants in Traub's proliferation of epithets. T.D. Jacobson (Hunt Institute, pers. comm.) believes these are a rhizomeless form of *A. rhizomatum* that cannot be assigned a varietal name until the distribution of the rhizomeless character is studied and shown to warrant taxonomic status. Such a study would be difficult because many specimens that could have had rhizomes may lack them simply because the plants were improperly collected. If the rhizomeless form is found to be a taxonomically worthy variation, the specific epithet *rhizomatum* will prove to be an unfortunate choice.

REPRESENTATIVE SPECIMENS: **Catron Co.**: Datil Mts., 11 Sep 1976, *R. Fletcher 1461* (UNM); **Grant Co.**: Ridge above McKnight Creek, 15 Sep 1978, *J. Song 58* (SNM); **Hidalgo Co.**: Clanton Draw, Peloncillo Mts., 20 Aug 1993, *Sivinski 2524* (UNM); **Sierra Co.**: 20 miles west of Beaverhead, 20 Aug 1940, *A. Hershey s.n.* (NMC); **Socorro Co.**: Bear Trap Canyon, San Mateo Mts., 30 Aug 1975, *W. Wagner 1196* (UNM).

ALLIUM TEXTILE Nelson & Macbride, Bot. Gaz. 56:470. 1913.

This white-flowered, spring-blooming, fibrous bulb coat species is rare in New Mexico. It barely enters the state at the northwestern and northeastern corners where it occurs with sagebrush or other arid associations. *Allium geyeri*, *A. macropetalum* and *A. perdulce* have often

(Continued on page 6, Allium)

(Allium, Continued from page 5)

mistakenly been called *A. textile* in New Mexico collections. They can be distinguished by the characteristics already described under those species.

REPRESENTATIVE SPECIMEN OR RELIABLE CITATION: **San Juan Co.**: Middle Mesa near Navajo Reservoir, 14 May 1992, *Sivinski et al. 1850* (UNM); **Union Co.**: near Folsom (Ownbey 1950, pg. 212).

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Dale McNeal (Univ. of the Pacific) and Tim Lowrey (UNM) reviewed the manuscript and provided several helpful comments. I sent several specimens for identification to T.D. Jacobson (HUNT), who gave me the benifit of his opinion. I am grateful for their efforts.

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What's In A Name?

From time to time we have run in this newsletter little biographies of New Mexico botanists, such as Charles Wright (number 22), A.L. Hershey (number 23), and John Bigelow (number 26). In addition, most of us are aware of some of the more notable botanical luminaries, such as E.O. Wooton and Paul C. Standley. There remains, however, a little-known New Mexico botanist who made tremendous contributions to the knowledge of our fair state's flora, in spite of being in the Land of Enchantment for an extremely short period of time.

Loof Lirpa was born of a Czech father (Duben Hlupák Lirpa) and a Hungarian mother (Inga Maloof) in the tiny burg of Tászladány, Hungary, about 1910. One can surmise that Lirpa's given name derives from his mother's family name, Maloof; perhaps it was a nickname. Political unrest and a floundering economy drove the family from Europe to the United States, where his father found employment as the delivery "boy" for a florist shop in the Bronx. It is here that Loof found his interest sparked in things botanical and biological. Family friends remember his early desires to have a garden and to collect specimens of the local flora, as well as a small obsession with sponges, which he found in the bays and estuaries near the Bronx. Details of his education and growing-up are unknown, but we find him in 1937 in the employ of a medical company, hired to search for rare plants of potential pharmaceutical value. It is presumably during this period that he spent time in Iowa cataloging their natural curiosities; the Loof Wildlife Management Area in Osceola County signals his activities there. Eventually he made his way to New Mexico, and it was while foraging along the banks of the Rio Grande for rare aquatic plants, that Lirpa came across what has come to be known as Lirpa's spring minnow-wort. This botanical anomaly produces a single underwater flower once each year, on a single day in the spring of the year. Numerous attempts to locate it at other times have been unsuccessful, though we now know that it occurs in numerous waters throughout the state, being particularly common around Santa Fe and in the aquatic gardens at The Round House. A related species is common in France, known as Poisson d'Avril (contrary to our species, reports indicate that the French species is flowering early this year). Lirpa's spring minnow-wort is in the Fatuaceae family, and, because of its spring-flowering, belongs to the genus *Aprilis*. The species discovered by Loof Lirpa carries the name, *Aprilis stultis*. ☺

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Kelly Allred

Notices

- **First International Conference of Neotropical Orchidology** in Costa Rica, **21-24 May 2003**. For more information contact <jbl@cariari.ucr.ac.cr>.
- **Evolution 2003, 20-24 June 2003, Chico, California.** The annual meetings of the Society for the Study of Evolution, the Society of Systematic Biologists, and the American Society of Naturalists will be held on the campus of California State University, Chico. For more information, see <http://www.evolution2003.org/>.
- **Botany 2003, 27-30 July 2003, Mobile, Alabama.** The theme for Botany 2003 is "Aquatic and Wetland Plants: Wet & Wild." Societies having their annual meetings in conjunction with Botany 2003 are the American Bryological and Lichenological Society, the American Fern Society, ASPT, and the Botanical Society of America. For more information see <http://www. botany2003.org/>.
- **Constancea** is an on-line journal that will specialize in presenting material that would benefit from an electronic medium. It is named after Lincoln Constance and supersedes *University of California Publications in Botany*, which published its first issue in1902 and its last in 2001. We anticipate publishing works that are image-rich, that cite numerous specimens and geographic records, that are ongoing projects, that are by their nature hypertextual, or that are particularly timely. The first issue of *Constancea* celebrates the 80th birthday of Paul Silva. The journal is accessible at <http://ucjeps.berkeley. edu/constancea/>

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A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University.

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Statistical Summary of the Flora of New Mexico

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Nearly all earlier issues of this newsletter have reported new records of vascular plants for the state of New Mexico. Indeed, from 1996 through the year 2002, an average of 33 new species were reported each year. E.O Wooton and Paul C. Standley, in the first floristic account of the state (Wooton & Standley 1915), reported 2903 species in New Mexico. As might be expected, this number has steadily grown as botanical exploration of the state continued to this day. In this issue, we include eight new records for New Mexico.

With help from botanists throughout the state and the country, I have attempted to maintain an accurate list of the state's vascular flora (see <http://web.nmsu.edu/~kallred/herbweb/> and follow the links to the Working Index). I thought it would be of interest to some to have a current summary of the numbers of vascular plants documented for New Mexico.

The plants are cataloged by major group: Ferns and fern allies, gymnosperms, docotyledonous plants, and monocotyledonous plants. A summary of these groups is presented first, followed by separate listings for each group, for which the families are in alphabetical order. The summary is concluding by a listing of the families in order of size (total number of species and infraspecific taxa).

Summary of the Groups

Group	Genera	Native Species	Exotic Species	Total Species	Additional Infraspecific Taxa	Total Taxa
Ferns & Fern Allies	28	80	0	80	4	84
Gymnosperms	7	27	0	27	2	29
Dicots	772	2471	304	2775	391	3166
Monocots	197	597	136	732	61	793
Totals	1004	3175	440	3614	458	4072

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

Ferns and Fern Allies						
Family	Genera	Species				
		Native 100%	Exotic 0%	Total Species	Additional Infraspecific Taxa	Total Taxa
1. Aspleniaceae	1	5	0	5	0	5
2. Azollaceae	1	1	0	1	0	1
3. Dennstaedtiaceae	1	1	0	1	0	1
4. Dryopteridaceae	6	13	0	13	0	13
5. Equisetaceae	1	4	0	4	0	4
6. Isoetaceae	1	1	0	1	0	1
7. Lycopodiaceae	2	3	0	3	0	3
8. Marsileaceae	1	1	0	1	0	1
9. Ophioglossaceae	2	5	0	5	0	5
10. Polypodiaceae	1	2	0	2	0	2
11. Pteridaceae	9	32	0	32	3	35
12. Salviniaceae	1	1	0	1	0	1
13. Selaginellaceae	1	11	0	11	1	12
Totals	28	80	0	80	4	84

Gymnosperms						
Family	Genera	Species				
		Native 100%	Exotic 0%	Total Species	Additional Infraspecific Taxa	Total Taxa
1. Cupressaceae	2	8	0	8	0	8
2. Ephedraceae	1	6	0	6	0	6
3. Pinaceae	4	13	0	13	2	15
Totals	7	27	0	27	2	29

Dicotyledonous Plants						
Family	Genera	Species				
		Native 89%	Exotic 11%	Total Species	Additional Infraspecific Taxa	Total Taxa
1. Acanthaceae	10	11	0	11	0	11
2. Aceraceae	1	3	0	3	4	7
3. Adoxaceae	1	1	0	1	0	1
4. Aizoaceae	2	2	0	2	0	2
5. Amaranthaceae	9	27	8	35	1	36
6. Anacardiaceae	2	6	0	6	6	12
7. Apiaceae (Umbelliferae)	35	55	8	63	1	64
8. Apocynaceae	5	11	1	12	3	15
9. Araliaceae	1	1	0	1	0	1
10. Aristolochiaceae	1	2	0	2	0	2
11. Asclepiadaceae	4	32	0	32	2	34
12. Asteraceae (Compositae)	170	555	46	601	101	702
13. Berberidaceae	1	6	1	7	0	7
14. Betulaceae	3	4	0	4	0	4
15. Bignoniaceae	2	2	1	3	1	4
16. Bixaceae	1	1	0	1	0	1
17. Boraginaceae	18	58	5	63	12	75
18. Brassicaceae (Cruciferae)	47	97	43	140	23	163
19. Buddlejaceae	1	1	0	1	0	1
20. Cactaceae	14	66	1	67	28	95
21. Callitrichaceae	1	3	0	3	0	3

22. Campanulaceae	4	8	1	9	1	10
23. Cannabaceae	2	1	1	2	0	2
24. Capparaceae	4	8	0	8	1	9
25. Caprifoliaceae	4	13	2	15	3	18
26. Caryophyllaceae	13	49	11	60	4	64
27. Celastraceae	2	2	0	2	0	2
28. Ceratophyllaceae	1	1	0	1	0	1
29. Chenopodiaceae	19	51	20	71	3	74
30. Cistaceae	1	1	0	1	0	1
31. Clusiaceae (Guttiferae)	1	2	0	2	0	2
32. Convolvulaceae	6	21	4	25	1	26
33. Cornaceae	1	2	0	2	0	2
34. Crassulaceae	2	7	0	7	2	9
35. Crossosomataceae	2	3	0	3	0	3
36. Cucurbitaceae	12	13	5	18	2	20
37. Cuscutaceae	1	17	2	19	2	21
38. Dipsacaceae	1	0	1	1	0	1
39. Elaeagnaceae	2	2	1	3	0	3
40. Elatinaceae	2	3	0	3	0	3
41. Ericaceae	10	18	0	18	0	18
42. Euphorbiaceae	11	68	3	71	2	73
43. Fabaceae (Leguminosae)	51	229	30	259	65	324
44. Fagaceae	1	16	0	16	0	16
45. Fouquieriaceae	1	1	0	1	0	1
46. Frankeniaceae	1	1	0	1	0	1
47. Fumariaceae	1	2	0	2	1	3
48. Garryaceae	1	3	0	3	0	3
49. Gentianaceae	10	23	1	24	2	26
50. Geraniaceae	2	5	1	6	0	6
51. Grossulariaceae	1	10	0	10	1	11
52. Haloragaceae	2	4	2	6	0	6
53. Hydrangeaceae	4	5	0	5	4	9
54. Hydrophyllaceae	5	29	0	29	1	30
55. Juglandaceae	1	2	0	2	0	2
56. Koeberliniaceae	1	1	0	1	0	1
57. Krameriaceae	1	3	0	3	0	3
58. Lamiaceae (Labiatae)	21	57	8	65	6	71
59. Lentibulariaceae	1	1	0	1	0	1
60. Linaceae	1	14	1	15	0	15
61. Loasaceae	2	19	0	19	3	22
62. Loganiaceae	1	1	0	1	0	1
63. Lythraceae	5	1	6	7	0	7
64. Malpighiaceae	2	2	0	2	0	2
65. Malvaceae	14	37	8	45	5	50
66. Meliaceae	1	0	1	1	0	1
67. Menyanthaceae	1	1	0	1	0	1
68. Molluginaceae	1	1	1	2	0	2
69. Moraceae	2	1	2	3	0	3
70. Nyctaginaceae	10	43	0	43	6	49
71. Nymphaeaceae	2	1	2	3	0	3
72. Oleaceae	4	7	2	9	0	9
73. Onagraceae	10	57	1	58	11	69
74. Orobanchaceae	2	6	0	6	1	7
75. Oxalidaceae	1	6	0	6	1	7
76. Papaveraceae	3	6	2	8	2	10
77. Parnassiaceae	1	2	0	2	0	2
78. Passifloraceae	1	1	0	1	0	1
79. Pedaliaceae	1	4	0	4	0	4
80. Phytolaccaceae	2	2	0	2	0	2

81. Plantaginaceae	1	11	1	12	0	12
82. Platanaceae	1	1	0	1	0	1
83. Plumbaginaceae	1	1	0	1	0	1
84. Polemoniaceae	11	59	0	59	6	65
85. Polygalaceae	2	12	0	12	1	13
86. Polygonaceae	9	68	13	81	14	95
87. Portulacaceae	8	23	4	27	2	29
88. Primulaceae	7	14	2	16	0	16
89. Rafflesiaceae	1	1	0	1	0	1
90. Ranunculaceae	13	59	4	63	3	66
91. Resedaceae	1	1	0	1	0	1
92. Rhamnaceae	6	15	0	15	0	15
93. Rosaceae	25	67	9	76	11	87
94. Rubiaceae	7	23	1	24	4	28
95. Rutaceae	3	3	0	3	5	8
96. Salicaceae	2	29	3	32	5	37
97. Santalaceae	1	1	0	1	0	1
98. Sapindaceae	2	2	0	2	0	2
99. Sapotaceae	1	1	0	1	0	1
100. Saururaceae	1	1	0	1	0	1
101. Saxifragaceae	4	18	0	18	0	18
102. Scrophulariaceae	24	114	9	123	11	134
103. Simaroubaceae	1	0	1	1	0	1
104. Solanaceae	9	37	11	48	7	55
105. Sterculiaceae	1	3	0	3	0	3
106. Tamaricaceae	1	0	3	3	0	3
107. Ulmaceae	2	2	2	4	0	4
108. Urticaceae	3	3	3	6	1	7
109. Valerianaceae	1	5	0	5	0	5
110. Verbenaceae	9	28	3	31	5	36
111. Violaceae	2	8	0	8	3	11
112. Viscaceae	2	12	0	12	1	13
113. Vitaceae	3	5	0	5	0	5
114. Zygophyllaceae	5	5	3	8	0	8
Totals	772	2470	305	2775	391	3166

Monocotyledonous Plants						
Family	Genera	Species				
		Native 82%	Exotic 18%	Total Species	Additional Infraspecific Taxa	Total Taxa
1. Agavaceae	2	17	0	17	4	21
2. Alismataceae	3	11	0	11	0	11
3. Bromeliaceae	1	1	0	1	0	1
4. Commelinaceae	2	5	0	5	1	6
5. Cyperaceae	14	133	1	134	2	136
6. Hydrocharitaceae	3	4	1	5	0	5
7. Iridaceae	2	6	0	6	0	6
8. Juncaceae	2	27	0	27	1	28
9. Juncaginaceae	1	2	0	2	0	2
10. Lemnaceae	2	9	0	9	0	9
11. Liliaceae	25	42	3	45	2	47
12. Najadaceae	1	2	0	2	0	2
13. Nolinaceae	2	6	0	6	0	6
14. Orchidaceae	13	28	1	29	4	33
15. Poaceae (Gramineae)	118	283	128	411	46	457
16. Pontederiaceae	1	2	0	2	0	2
17. Potamogetonaceae	1	11	1	12	1	13

18. Ruppiaceae	1	1	0	1	0	1
19. Sparganiaceae	1	3	0	3	0	3
20. Typhaceae	1	3	1	3	0	3
21. Zannichelliaceae	1	1	0	1	0	1
Totals	197	597	136	732	61	793

All Families – Sorted by Total Taxa						
Family	Genera	Species				
		Native 88%	Exotic 12%	Total Species	Additional Infraspecific Taxa	Total Taxa
1. Asteraceae (Compositae)	170	555	46	601	101	702
2. Poaceae (Gramineae)	118	283	128	411	46	457
3. Fabaceae (Leguminosae)	51	229	30	259	65	324
4. Brassicaceae (Cruciferae)	47	97	43	140	23	163
5. Cyperaceae	14	133	1	134	2	136
6. Scrophulariaceae	24	114	9	123	11	134
7. Polygonaceae	9	68	13	81	14	95
8. Cactaceae	14	66	1	67	28	95
9. Rosaceae	25	67	9	76	11	87
10. Boraginaceae	18	58	5	63	12	75
11. Chenopodiaceae	19	51	20	71	3	74
12. Euphorbiaceae	11	68	3	71	2	73
13. Lamiaceae (Labiatae)	21	57	8	65	6	71
14. Onagraceae	10	57	1	58	11	69
15. Ranunculaceae	13	59	4	63	3	66
16. Polemoniaceae	11	59	0	59	6	65
17. Apiaceae (Umbelliferae)	35	55	8	63	1	64
18. Caryophyllaceae	13	49	11	60	4	64
19. Solanaceae	9	37	11	48	7	55
20. Malvaceae	14	37	8	45	5	50
21. Nyctaginaceae	10	43	0	43	6	49
22. Liliaceae	25	42	3	45	2	47
23. Salicaceae	2	29	3	32	5	37
24. Amaranthaceae	9	27	8	35	1	36
25. Verbenaceae	9	28	3	31	5	36
26. Pteridaceae	9	32	0	32	3	35
27. Asclepiadaceae	4	32	0	32	2	34
28. Orchidaceae	13	28	1	29	4	33
29. Hydrophyllaceae	5	29	0	29	1	30
30. Portulacaceae	8	23	4	27	2	29
31. Juncaceae	2	27	0	27	1	28
32. Rubiaceae	7	23	1	24	4	28
33. Convolvulaceae	6	21	4	25	1	26
34. Gentianaceae	10	23	1	24	2	26
35. Loasaceae	2	19	0	19	3	22
36. Cuscutaceae	1	17	2	19	2	21
37. Agavaceae	2	17	0	17	4	21
38. Cucurbitaceae	12	13	5	18	2	20
39. Ericaceae	10	18	0	18	0	18
40. Saxifragaceae	4	18	0	18	0	18
41. Caprifoliaceae	4	13	2	15	3	18
42. Fagaceae	1	16	0	16	0	16
43. Primulaceae	7	14	2	16	0	16
44. Linaceae	1	14	1	15	0	15
45. Rhamnaceae	6	15	0	15	0	15
46. Pinaceae	4	13	0	13	2	15
47. Apocynaceae	5	11	1	12	3	15

48. Dryopteridaceae	6	13	0	13	0	13
49. Polygalaceae	2	12	0	12	1	13
50. Viscaceae	2	12	0	12	1	13
51. Potamogetonaceae	1	11	1	12	1	13
52. Plantaginaceae	1	11	1	12	0	12
53. Selaginellaceae	1	11	0	11	1	12
54. Anacardiaceae	2	6	0	6	6	12
55. Acanthaceae	10	11	0	11	0	11
56. Alismataceae	3	11	0	11	0	11
57. Grossulariaceae	1	10	0	10	1	11
58. Violaceae	2	8	0	8	3	11
59. Campanulaceae	4	8	1	9	1	10
60. Papaveraceae	3	6	2	8	2	10
61. Oleaceae	4	7	2	9	0	9
62. Lemnaceae	2	9	0	9	0	9
63. Capparaceae	4	8	0	8	1	9
64. Crassulaceae	2	7	0	7	2	9
65. Hydrangeaceae	4	5	0	5	4	9
66. Cupressaceae	2	8	0	8	0	8
67. Zygophyllaceae	5	5	3	8	0	8
68. Rutaceae	3	3	0	3	5	8
69. Berberidaceae	1	6	1	7	0	7
70. Lythraceae	5	1	6	7	0	7
71. Orobanchaceae	2	6	0	6	1	7
72. Oxalidaceae	1	6	0	6	1	7
73. Urticaceae	3	3	3	6	1	7
74. Aceraceae	1	3	0	3	4	7
75. Ephedraceae	1	6	0	6	0	6
76. Geraniaceae	2	5	1	6	0	6
77. Haloragaceae	2	4	2	6	0	6
78. Iridaceae	2	6	0	6	0	6
79. Nolinaceae	2	6	0	6	0	6
80. Commelinaceae	2	5	0	5	1	6
81. Aspleniaceae	1	5	0	5	0	5
82. Ophioglossaceae	2	5	0	5	0	5
83. Valerianaceae	1	5	0	5	0	5
84. Vitaceae	3	5	0	5	0	5
85. Hydrocharitaceae	3	4	1	5	0	5
86. Equisetaceae	1	4	0	4	0	4
87. Betulaceae	3	4	0	4	0	4
88. Pedaliaceae	1	4	0	4	0	4
89. Ulmaceae	2	2	2	4	0	4
90. Bignoniaceae	2	2	1	3	1	4
91. Lycopodiaceae	2	3	0	3	0	3
92. Callitrichaceae	1	3	0	3	0	3
93. Crossosomataceae	2	3	0	3	0	3
94. Elaeagnaceae	2	2	1	3	0	3
95. Elatinaceae	2	3	0	3	0	3
96. Garryaceae	1	3	0	3	0	3
97. Krameriaceae	1	3	0	3	0	3
98. Moraceae	2	1	2	3	0	3
99. Nymphaeaceae	2	1	2	3	0	3
100. Sterculiaceae	1	3	0	3	0	3
101. Tamaricaceae	1	0	3	3	0	3
102. Sparganiaceae	1	3	0	3	0	3
103. Typhaceae	1	3	1	3	0	3
104. Fumariaceae	1	2	0	2	1	3
105. Polypodiaceae	1	2	0	2	0	2
106. Aizoaceae	2	2	0	2	0	2

107. Aristolochiaceae	1	2	0	2	0	2
108. Cannabaceae	2	1	1	2	0	2
109. Celastraceae	2	2	0	2	0	2
110. Clusiaceae (Guttiferae)	1	2	0	2	0	2
111. Cornaceae	1	2	0	2	0	2
112. Juglandaceae	1	2	0	2	0	2
113. Malpighiaceae	2	2	0	2	0	2
114. Molluginaceae	1	1	1	2	0	2
115. Parnassiaceae	1	2	0	2	0	2
116. Phytolaccaceae	2	2	0	2	0	2
117. Sapindaceae	2	2	0	2	0	2
118. Juncaginaceae	1	2	0	2	0	2
119. Najadaceae	1	2	0	2	0	2
120. Pontederiaceae	1	2	0	2	0	2
121. Azollaceae	1	1	0	1	0	1
122. Dennstaedtiaceae	1	1	0	1	0	1
123. Isoetaceae	1	1	0	1	0	1
124. Marsileaceae	1	1	0	1	0	1
125. Salviniaceae	1	1	0	1	0	1
126. Adoxaceae	1	1	0	1	0	1
127. Araliaceae	1	1	0	1	0	1
128. Bixaceae	1	1	0	1	0	1
129. Buddlejaceae	1	1	0	1	0	1
130. Ceratophyllaceae	1	1	0	1	0	1
131. Cistaceae	1	1	0	1	0	1
132. Dipsacaceae	1	0	1	1	0	1
133. Fouquieriaceae	1	1	0	1	0	1
134. Frankeniaceae	1	1	0	1	0	1
135. Koeberliniaceae	1	1	0	1	0	1
136. Lentibulariaceae	1	1	0	1	0	1
137. Loganiaceae	1	1	0	1	0	1
138. Meliaceae	1	0	1	1	0	1
139. Menyanthaceae	1	1	0	1	0	1
140. Passifloraceae	1	1	0	1	0	1
141. Platanaceae	1	1	0	1	0	1
142. Plumbaginaceae	1	1	0	1	0	1
143. Rafflesiaceae	1	1	0	1	0	1
144. Resedaceae	1	1	0	1	0	1
145. Santalaceae	1	1	0	1	0	1
146. Sapotaceae	1	1	0	1	0	1
147. Saururaceae	1	1	0	1	0	1
148. Simaroubaceae	1	0	1	1	0	1
149. Bromeliaceae	1	1	0	1	0	1
150. Ruppiaceae	1	1	0	1	0	1
151. Zannichelliaceae	1	1	0	1	0	1
Totals	1004	3174	441	3614	458	4072

What's In A Name?

[Ed. Note: This column in the last issue told of one Loof Lirpa, intrepid plant explorer in New Mexico. Lest one be misled, I here remind readers of the date of that issue (April 1), call attention to the scientific names associated with the plant he collected (Fatuaceae family, Gr. *fatua*, silly; Latin *Aprilis*, April; Latin *stultis*, foolish), and advise that one spell his name backwards (which also gives the English meaning of his father's first and middle Czech names). "Poisson d'Avril" (French, April fish) is actually what one says to another on April 1st each year in France. My apologies for this lapse into fatuousness. I promise to be more *severus* (Latin, serious) for at least another 365 days.] ☺

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Kelly Allred

Plant Distribution Reports

— Kelly W. Allred [Department of Animal & Range Sciences, MSC Box 3-I, New Mexico State University, Las Cruces, NM 88003]

Helictotrichon hookeri (Scribner) Henrard (Gramineae): Taos Co.: Carson National Forest, 1 mile east of Blue Lake, 12500 ft, 10 Aug 1923, C. Copple 12 (Forest Service Herbarium, Albuquerque). [This species was reported for New Mexico by Hitchcock & Chase (Manual of the Grasses of the United States), but no validating specimens could be found (even at US), until this one. Some now treat this species as *Avenula hookeri* (Scribner) Holub.]

Panicum alatum Zuloaga & Morrone var. *alatum* (Gramineae): Hidalgo Co.: dry plains 1 mi n of Rodeo, adjacent to Arizona state line, roadside ditch, T28S R22W sec 24, about 4500 ft, 29 Aug 1986, K.W. Allred 4298 (NMCR). [The new species is very similar to *Panicum hirticaule*, but differs by having 2 fleshy thickenings at the base of the fertile floret, which is also shortly stipitate; see next for differentiation of varieties.]

Panicum alatum Zuloaga & Morrone var. *minus* (Andersson) Zuloaga & Morrone (Gramineae): Hidalgo Co.: Animas Valley east of the Peloncillo Mts. low sink-hole along main road and e of Cloverdale, grassland, about 5200 ft, 18 Aug 1986, K.W. Allred 4155 (NMCR); just west of the Animas Mts on the Gray Ranch. 5428 ft, 20 Sep 1994, L. McIntosh 3061 (NMCR): Peloncillo Mts. Skeleton Canyon, about 1/4 mi e of Arizona state line, along canyon bottom, 4800 ft, 15 Sep 1989, K.W. Allred 5031 (NMCR). Doña Ana Co.: Ropes Spring, San Andres Mts. 6000 ft. 20 Oct 1935, K.W. Parker s.n. (NMCR). [This variety was reported for New Mexico by Zuloaga & Morrone (Ann. Missouri Bot. Gard. 83:200-280. 1996.), and we add these additional records. Var. *minus* differs from the typical variety in having smooth, epapillate anthecia.]

— Richard Worthington [P.O. Box 13331, El Paso, TX 79913]

**Desmanthus leptolobus* Torrey & Gray (Fabaceae): Hidalgo Co.: Peloncillo Mts., Hwy. 80 at Granite Gap (T25S, R21E, SE 1/4) 4500 ft., 05 June 1983, Worthington 10707 (UTEP, NMC). [NMC sheet annotated by Melissa Luckow and record published in Luckow, M. 1993. Monograph of *Desmanthus* (Leguminosae- Mimosoideae). Syst. Bot. Monogr. 38:1-166. Presumably exotic here, perhaps introduced from central Texas in hay.]

Desmodium procumbens (Millspaugh) A.S. Hitchcock (Fabaceae): Hidalgo Co.: Peloncillo Mts., Skeleton Canyon, Spellenberg 6307 (NMC).

— Prather & Keith [see Botanical Literature of Interest]

+*Monarda humilis* (Torrey) Prather & Keith (Lamiaceae): Found in eight counties in central and western New Mexico; endemic.

— Andrew Hipp [University of Wisconsin, 430 Lincoln Drive, Madison, WI 53706]

Carex egglestonii Mackenzie (Cyperaceae): Rio Arriba Co. San Pedro Park Wilderness, Santa Fe National Forest, N36 03.646' W106 47.889', 9775 ft, trail edge, upslope ca. 30 ft from wet meadow adjoining stream, with *Veratrum, Pentaphylloides, Erigeron, Achillea*, 10 Aug 2003, Hipp 2280 [WIS].

— Ken Heil & Arnold Clifford [San Juan College, 4601 College Blvd., Farmington, NM 87402]

**Silphium laciniatum* Linnaeus (Asteraceae): McKinley Co.: Navajo Nation, ca. 5 miles north of Crownpoint on NM Hwy 371, just north of mile marker 28 & E side of Hwy, N35 degrees 44' 02" W108 degrees 08' 45", 6865 ft, 3 Sept 2003, Ken Heil 22827 & Arnold Clifford (NMCR, SJNM). [Though native to the Great Plains region, this seems to be a recent introduction in northwestern NM and is considered exotic there.]

The New Mexico Botanist

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